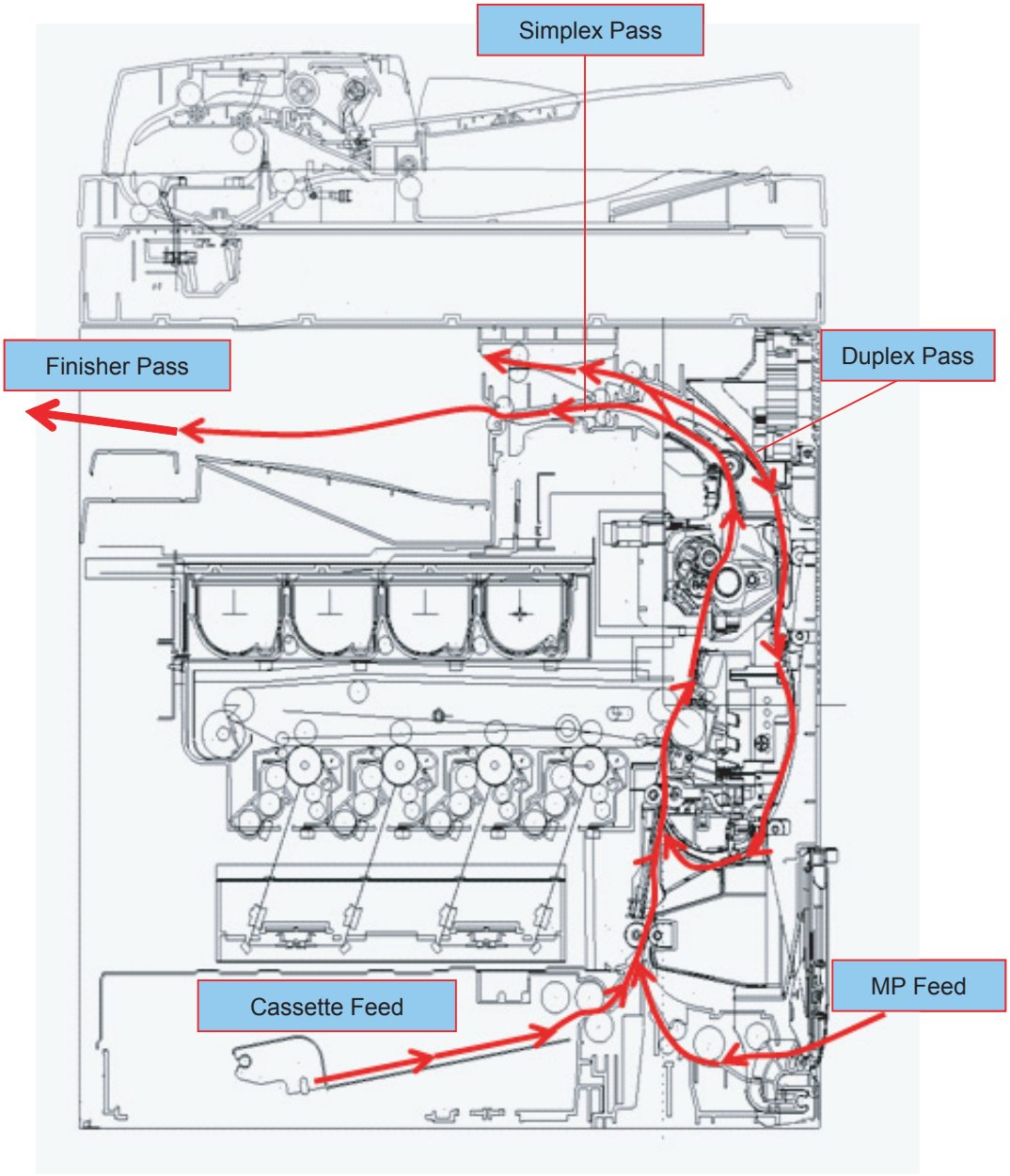
4. Alignment & Troubleshooting

This chapter describes some of the main service procedures including;
- Clearing paper jams
- Using the Diagnostic mode
- How to firmware upgrade
- Troubleshooting. etc.

4.1 Alignment and Adjustments

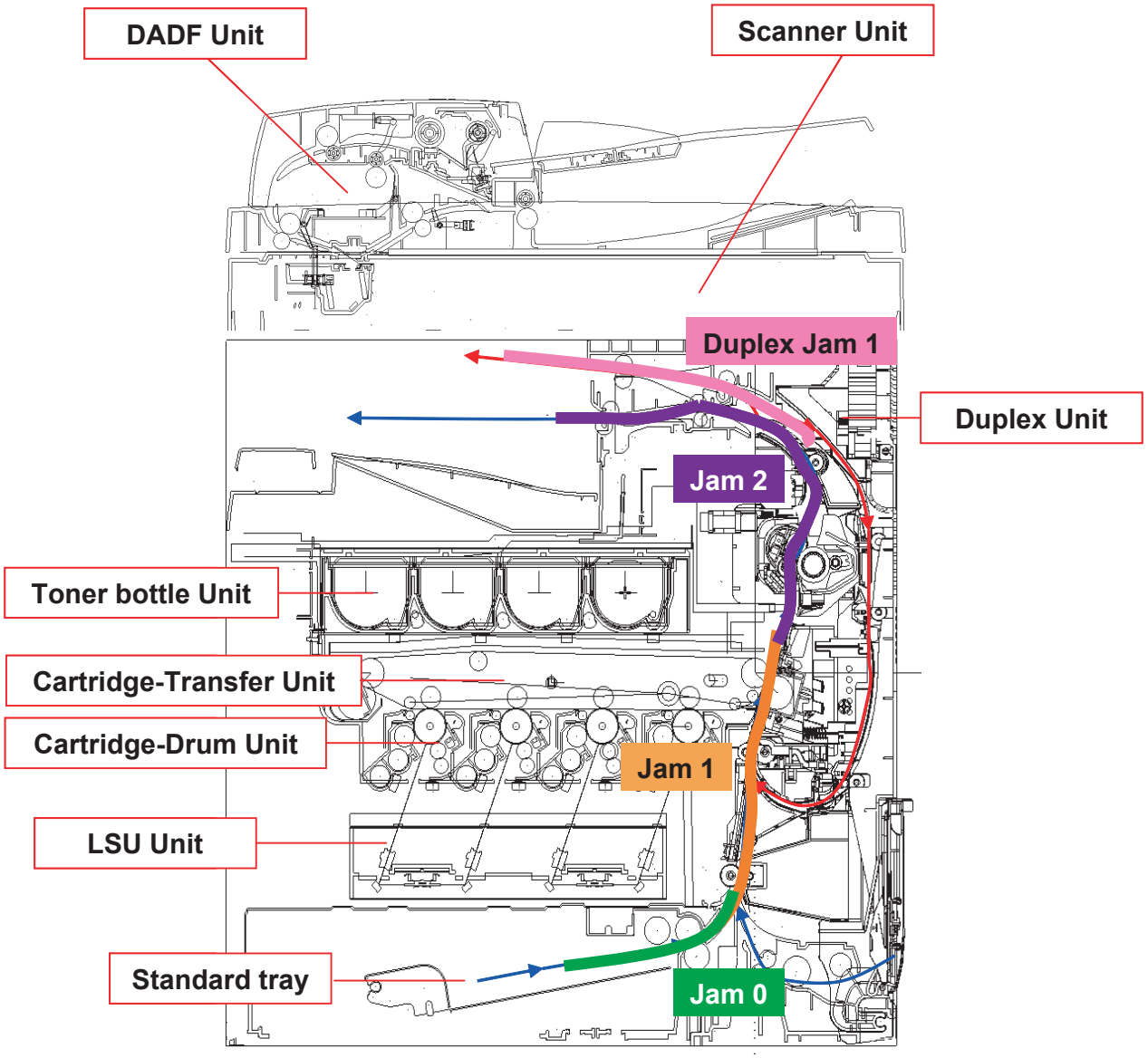
4.1.1 Paper path



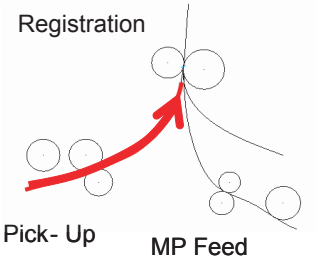
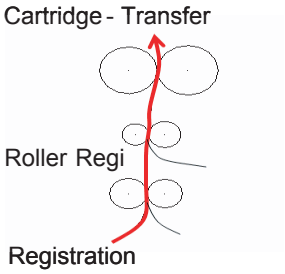
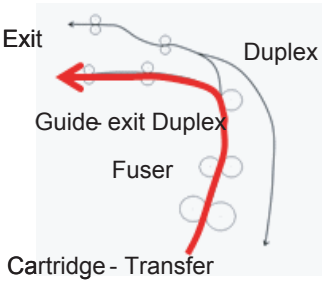
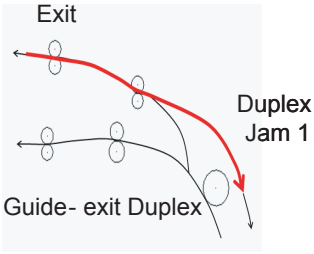
4.1.2 Clearing paper Jam

If a paper jam occurs an error message appears in the LCD display. Find and remove the jammed paper. If you don't see the paper, open the covers. Do not use a tweezers, pincers or other metal tools when clearing a paper jam. This could damage the internal mechanism causing print quality problems or possibly electrical shock.

■ **JAM type**



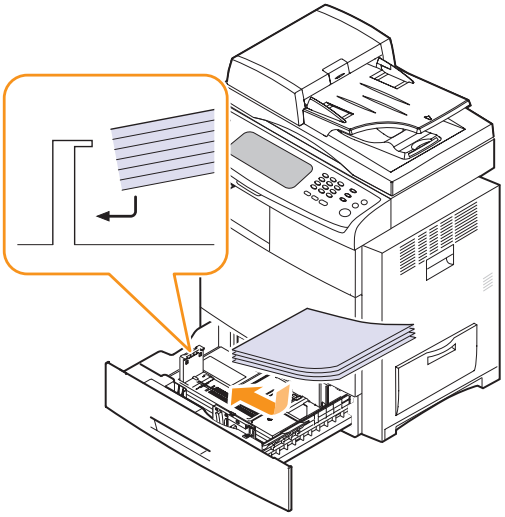
■ Description of JAM type

	Case	Jam Removal	Jam Layout
Jam 0	Leading edge of media does not arrive at registration within a certain time after pick-up(If fails at a time,it tries pick-up again)	1. Pull out cassette 2. Remove jammed paper	
Jam 1	Leading edge of media does not arrive at Exit Sensor within a certain time after registration	1. Open side cover 2. Remove jammed paper	
Jam 2	Trailing edge of media does not leave Exit Sensor within a certain time after touching registration	1. Open side cover 2. Remove jammed paper OR 1. Remove jammed paper from exit	
Duplex Jam 1	Trailing edge of media leaves Exit Sensor, and does not arrive at Duplex Jam1 Sensor	1. Open side cover 2. Remove jammed paper OR 1. Remove jammed paper from exit	

4.1.2.1 Tips for avoiding paper jams

By selecting the correct media types, most paper jams can be avoided.

- Ensure that the adjustable guides are positioned correctly.
- Do not overload the tray. Ensure that the paper level is below the paper capacity mark on the inside of the tray.
- Do not remove paper from the tray while your machine is printing.
- Flex, fan, and straighten paper before loading.
- Do not use creased, damp, or highly curled paper.
- Do not mix paper types in a tray.
- Use only recommended print media.
- Ensure that the recommended side of the print media is facing up in the tray, or facing down in the multi-purpose tray.
- If paper jams occur frequently when you print on A5/B5-sized paper: Load the paper into the tray with the long edge facing the front of the tray. If load the paper this way, printing both sides of the paper (Duplex) is not supported.

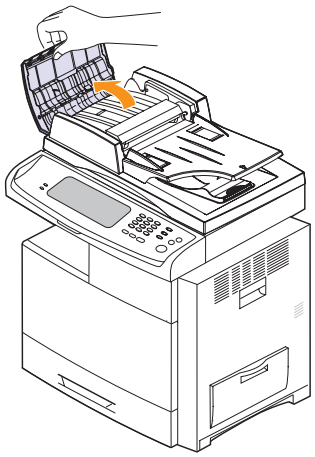


4.1.2.2 Clearing document jams

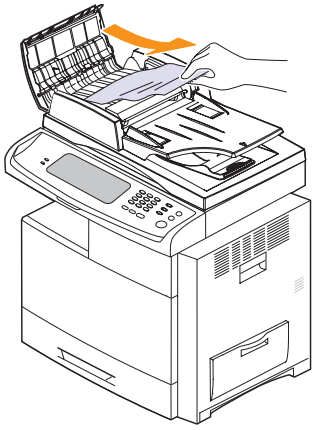
When an original jams while passing through the DADF, the warming message appears on the display screen.

1. Remove any remaining pages from the DADF.

2. Open the DADF cover.



3. Gently remove the jammed paper from the DADF.

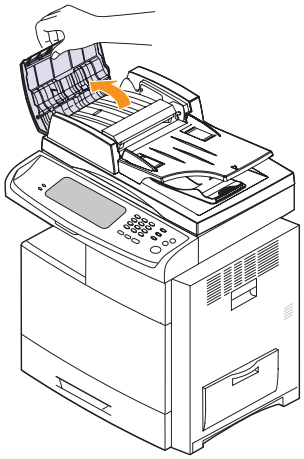


4. Close the DADF cover. Then reload the pages you removed, if any, in the DADF.

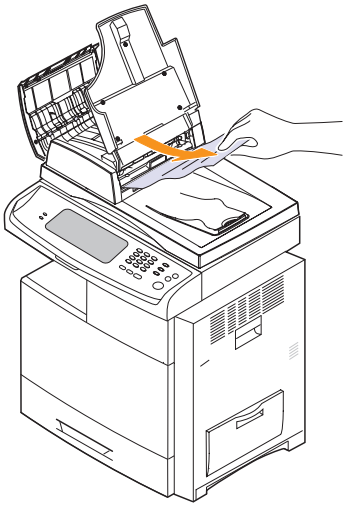
Misfeed of exiting paper

1. Remove the remaining documents from the DADF.

2. Open the DADF cover.



3. Open the document input tray upwards and pull the document gently out of the DADF.

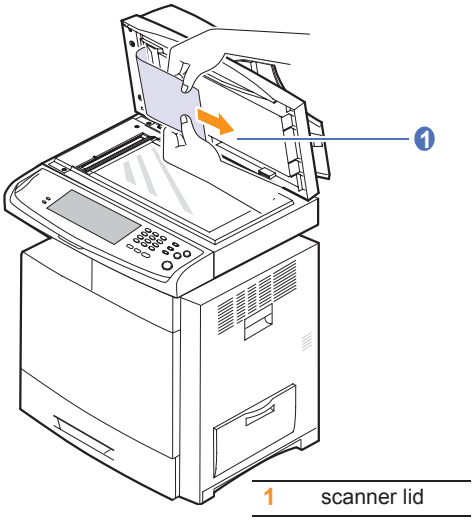


4. Close the DADF cover and the document input tray. Then place the documents back in the DADF.

Roller misfeed

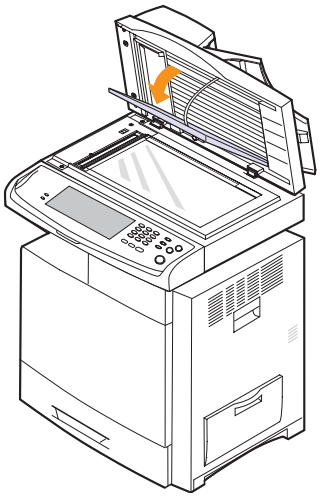
1. Open the scanner lid.

2. Grasp the misfed paper, and remove the paper from the feed area by carefully pulling it to the right using both hands.

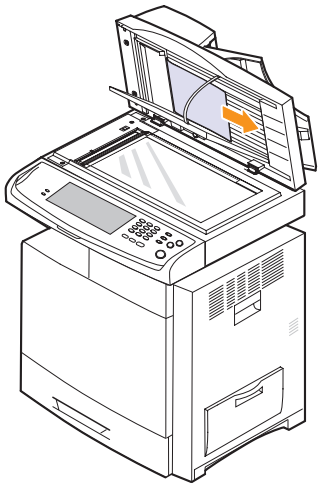


if you do not see the paper in this area, stop and go to step 3.

3. Open the white document background.



4. Remove the paper from the feed area by carefully pulling.



5. Close the white document background and the scanner lid. Then load the removed pages back into the DADF.

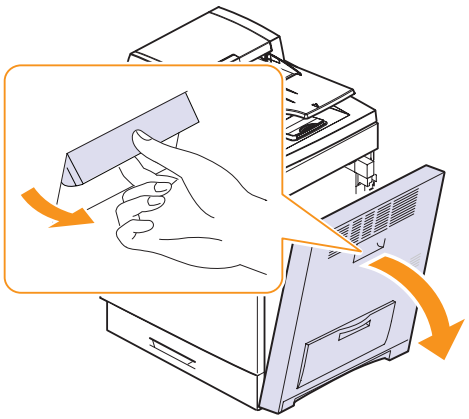
4.1.2.3 Clearing paper jams

When a paper jam occurs, the warming message appears on the display screen. Refer to the table below to locate and clear the paper jam.

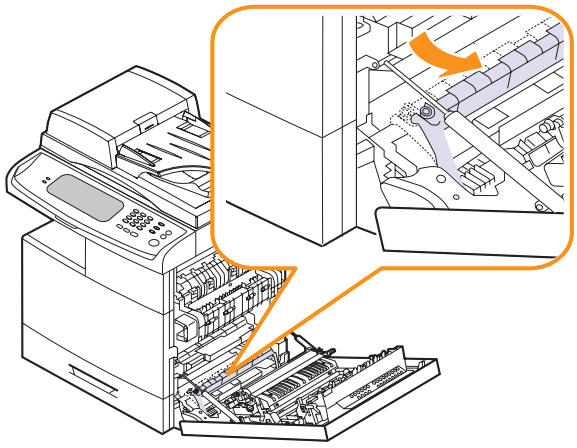
Message	Location of jam
Paper Jam in tray 1 Paper Jam in tray2 Paper Jam in tray 2(HCF) Paper Jam in tray3 Paper Jam in MP tray	In the paper feed area (tray 1, optional tray, or multi-purpose tray)
Paper Jam in exit area	In the paper inside the machine
Paper Jam inside of machine	In the fuser area
Paper Jam at the bottom of duplex path Paper Jam at the top of duplex path Paper Jam inside of duplex path	In the duplex unit
Paper jam in front of finisher	Paper jammed in the stacker.
Paper jam inside finisher	
Paper jam at exit of finisher	Paper jammed in the stacker exit part.
Paper jam inside finisher's duplex	Paper jammed in the stacker.

In the tray 1

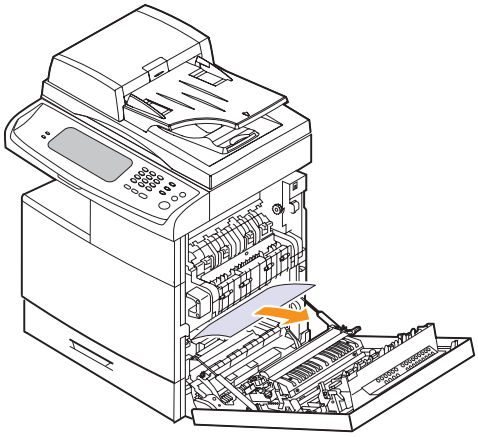
1. Open the side cover.



2. Open the guide in the direction shown.

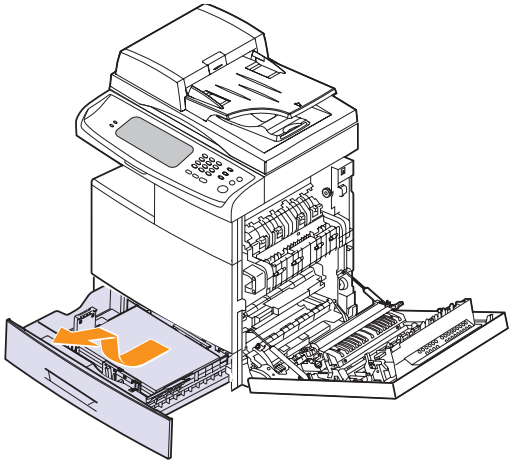


3. Carefully remove the misfed paper in the direction shown.

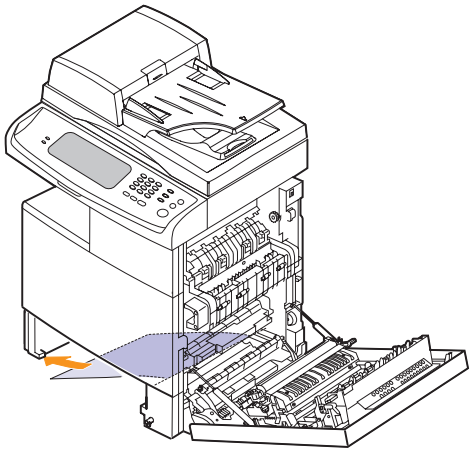


If the paper does not move when you pull, or if you do not see any paper in this area, stop and go to step 4.

4. Lift the front part of the tray up slightly to release the tray from the machine.

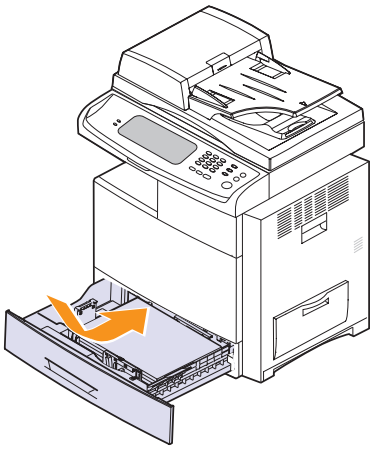


5. Remove the jammed paper by gently pulling it straight out.



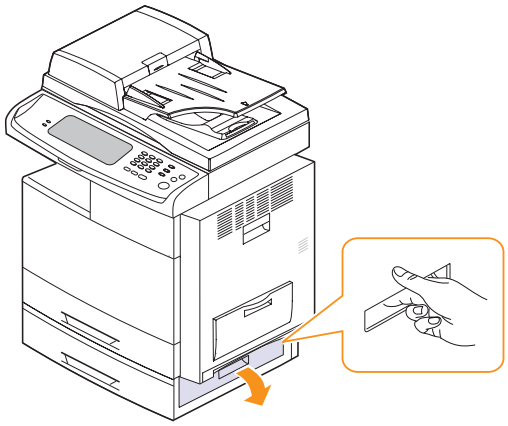
Once you remove the jammed paper here, open the side cover and then close it to clear the error message on the display.

6. Close the side cover and insert the paper tray. Lower the rear part of the Tray to align the rear edge with the corresponding slot of the machine, then insert it completely.

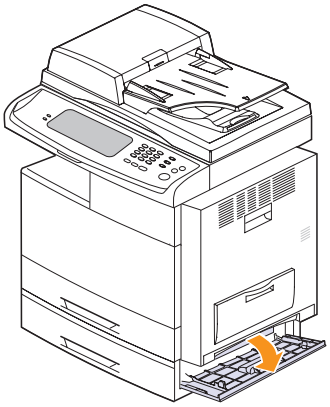


In the optional tray

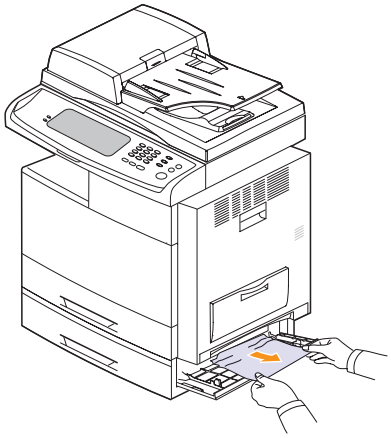
1. Open the outer cover in tray 2.



2. Open the inner cover of tray 2.

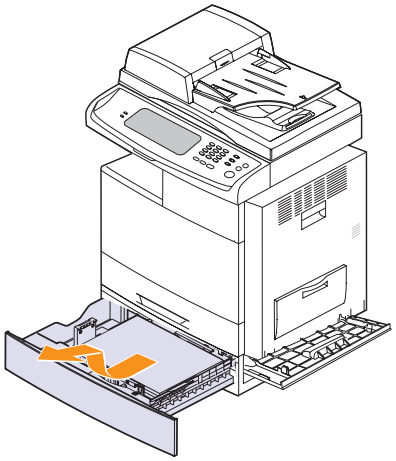


3. Pull the jammed paper out in the direction shown. To avoid tearing the paper, pull it out gently and slowly.



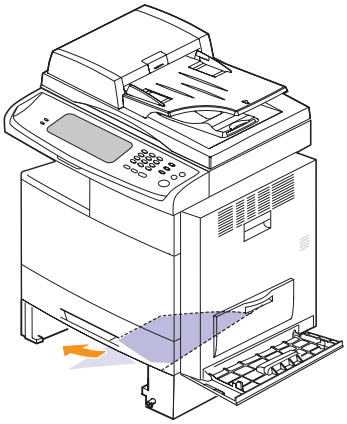
If the paper does not move when you pull, or if you do not see any paper in this area, stop and go to step 4.

4. Lift the front part of the tray slightly up to release the tray from the machine.

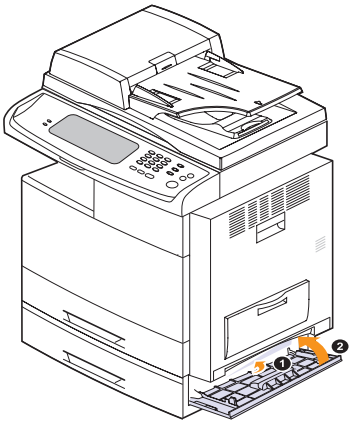


If the paper does not move when you pull, or if you do not see the paper in this area, stop and go to step 3.

5. Remove the paper in the direction shown. To avoid tearing the paper, pull it out gently and slowly.

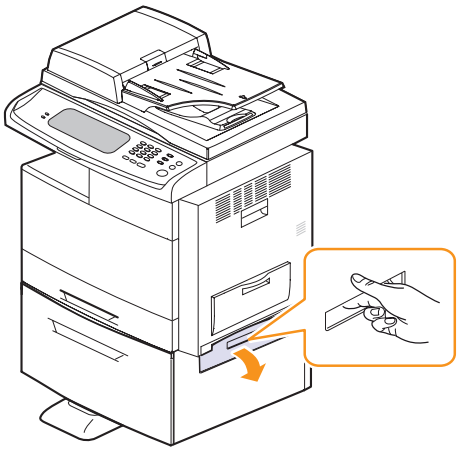


6. Insert the paper tray and close the two covers.

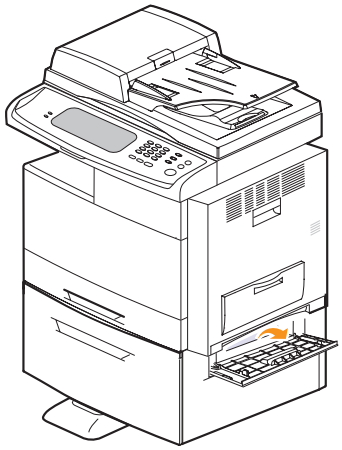


In the optional high capacity feeder

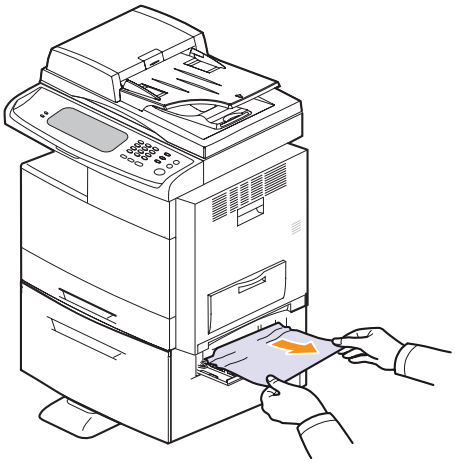
1. Open the outer cover of the high capacity feeder.



2. Open the inner cover of the high capacity feeder.



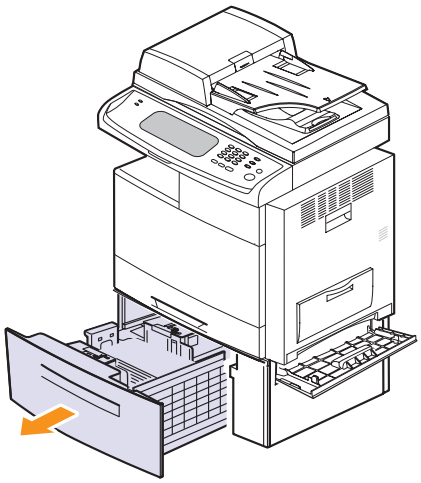
3. Pull the jammed paper out, in the direction shown, pulling gently and slowly in order to avoid tearing the paper.



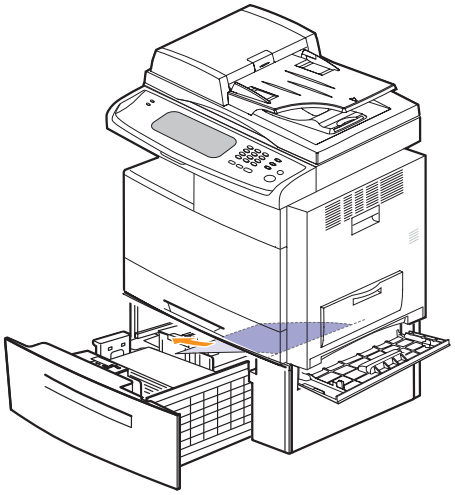
If the paper does not move when you pull, or if you do not see any paper in this area, stop and go to step 4.

4. Pull out the optional high capacity feeder.

5. Lift the front part of the tray slightly up to release the tray from the machine.

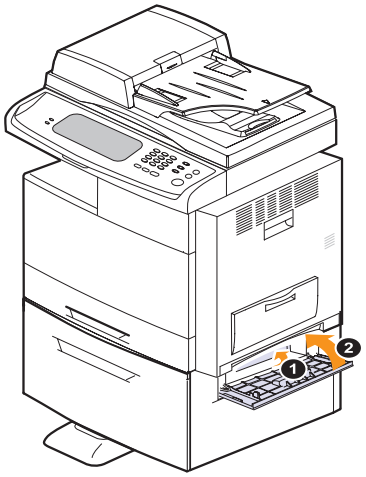


6. Remove the paper in the direction shown. Pull it out gently and slowly in order to avoid tearing the paper.



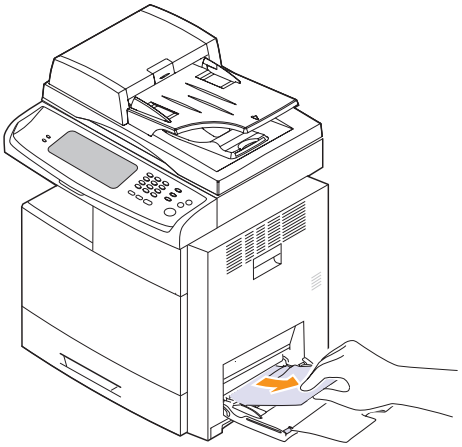
If the jammed paper is not visible, or if the paper is stuck, stop pulling and continue on to step 5.

7. Insert the paper tray and close the two covers.

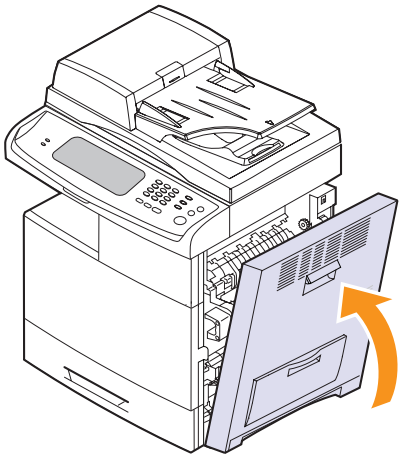


In the multi-purpose tray

1. If the paper is not feeding properly, pull the paper out of the machine.

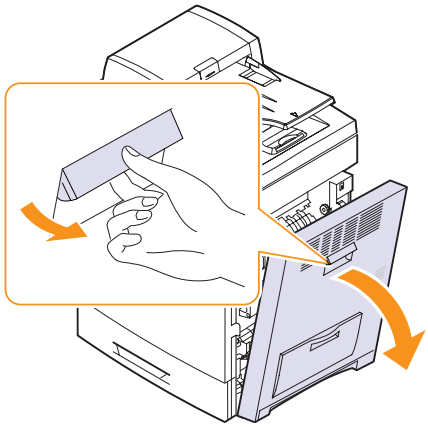


2. Open and close the side cover. Printing automatically resumes.

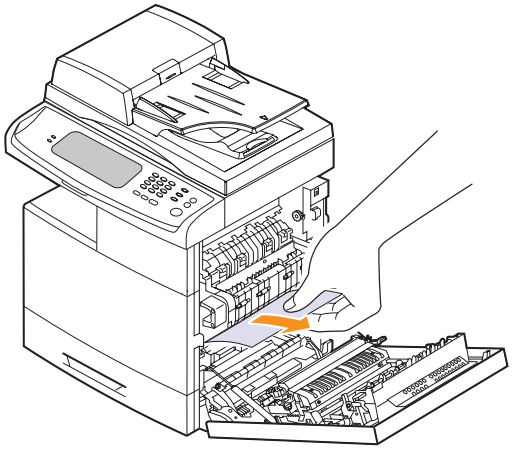


In the paper inside the machine

1. Open the side cover.

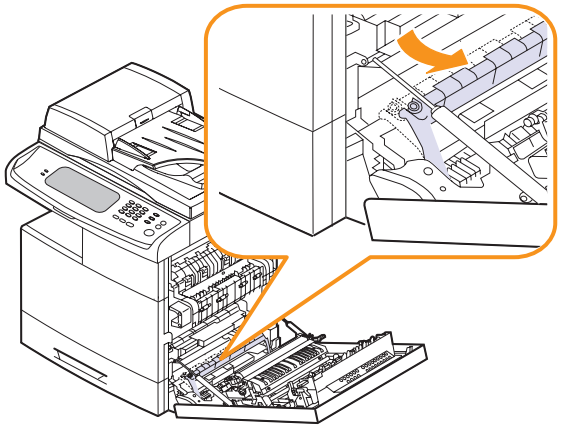


2. Remove the jammed paper, in the direction shown.



If you do not see any paper in this area, go to step 3.

3. Open the guide in the direction shown and pull the jammed paper gently out of the machine.

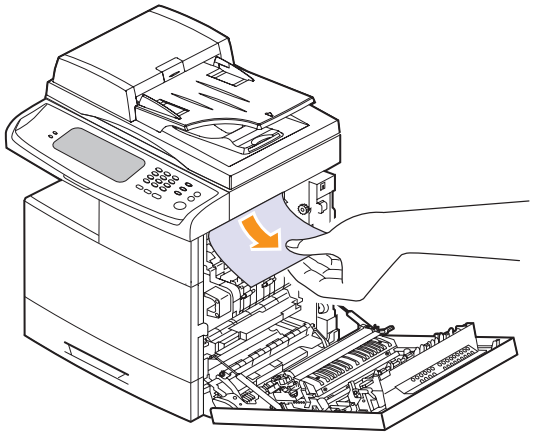


4. Open and close the front cover to resume printing.

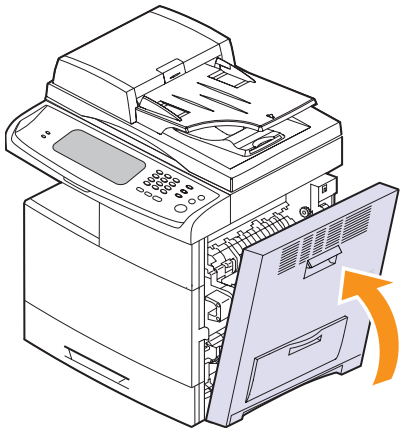
In the fuser area

1. Open the side cover.

2. Remove the jammed paper, in the direction shown.



3. Close the side cover. Printing automatically resumes.

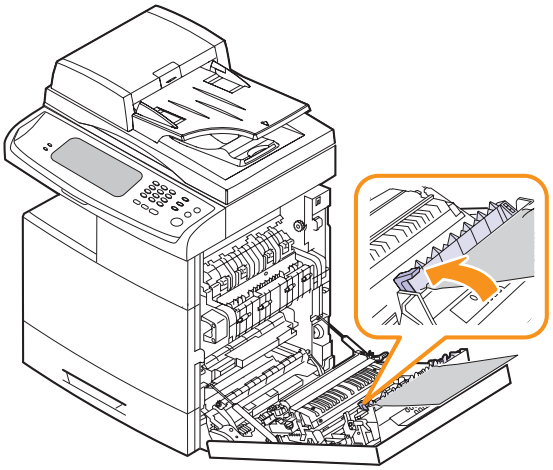


In the duplex unit area

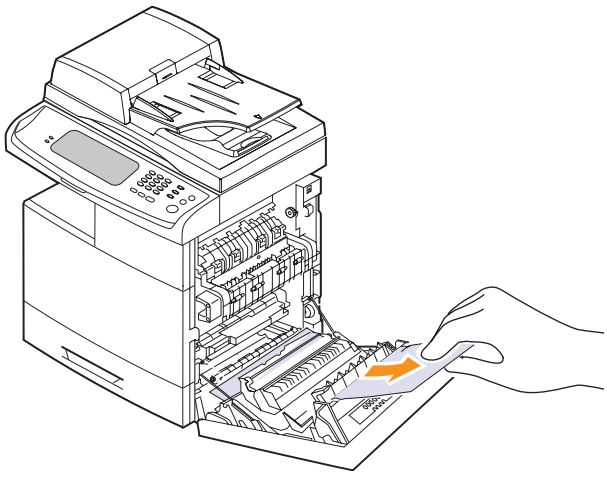
If the duplex unit is not inserted correctly, paper jam may occur. Make sure that the duplex unit is inserted correctly.

1. Open the side cover.

2. Release the guide to pull the jammed paper easily.



3. Remove the jammed paper.

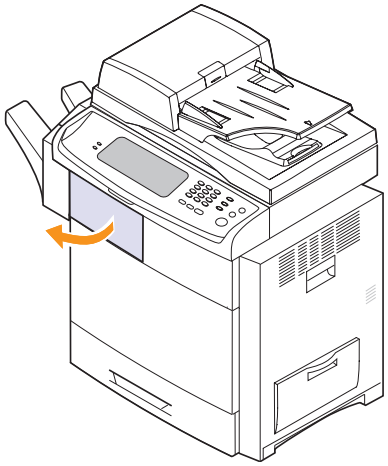


4. Close the side cover.

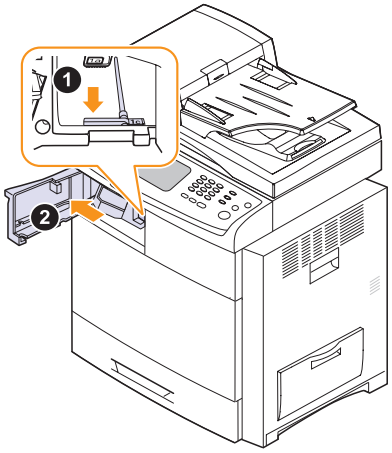
In the stacker (finisher)

Paper jam in front of finisher

1. Open the stacker front cover.



2. Press right of 1c lever and then push stacker to left.



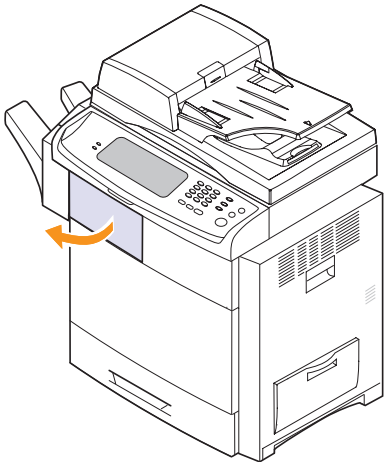
3. Remove the jammed paper.

4. Slide in the stacker until you hear the sound ‘click’.

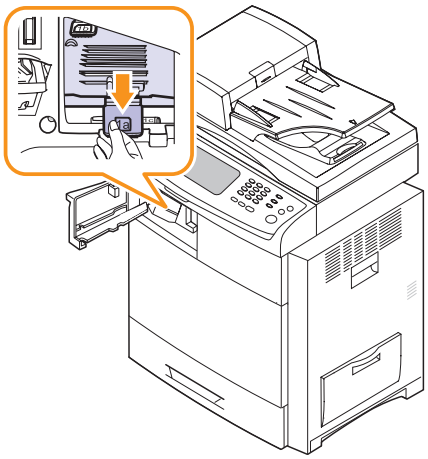
5. Close the stacker front cover.

Paper jam inside finisher, Paper jam inside finisher’s duplex

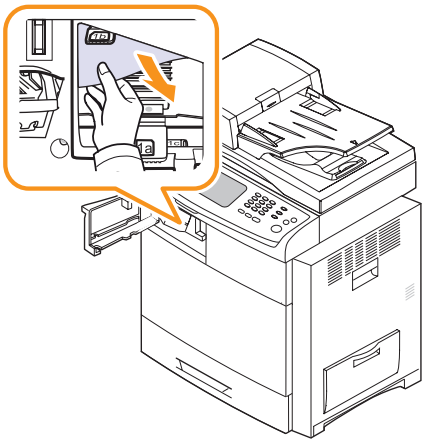
1. Open the stacker front cover.



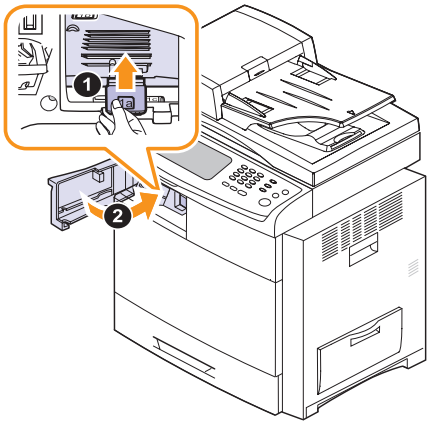
2. Pull the stacker lever 1a down. If necessary, pull the stacker lever 1b down as well.



3. Remove the jammed paper.

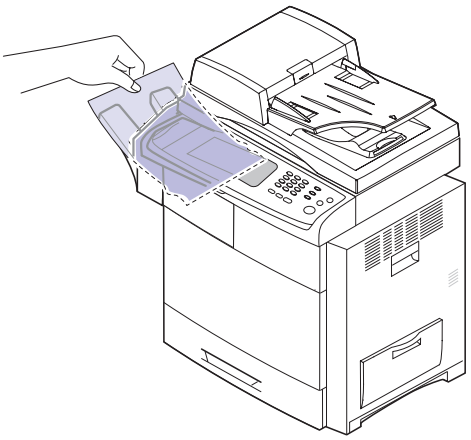


4. Pull up on the stacker lever and then close the stacker front cover.

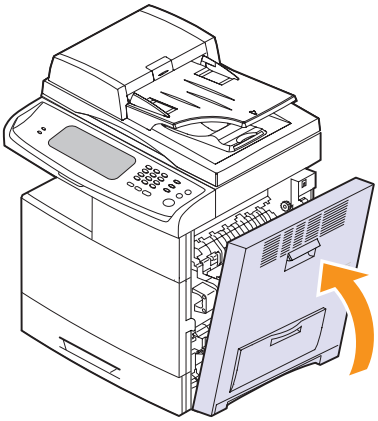


Paper jam at exit of finisher

1. Gently pull the paper out through the exit area.



2. Close the side cover. Printing automatically resumes.



3. Remove the jammed paper.

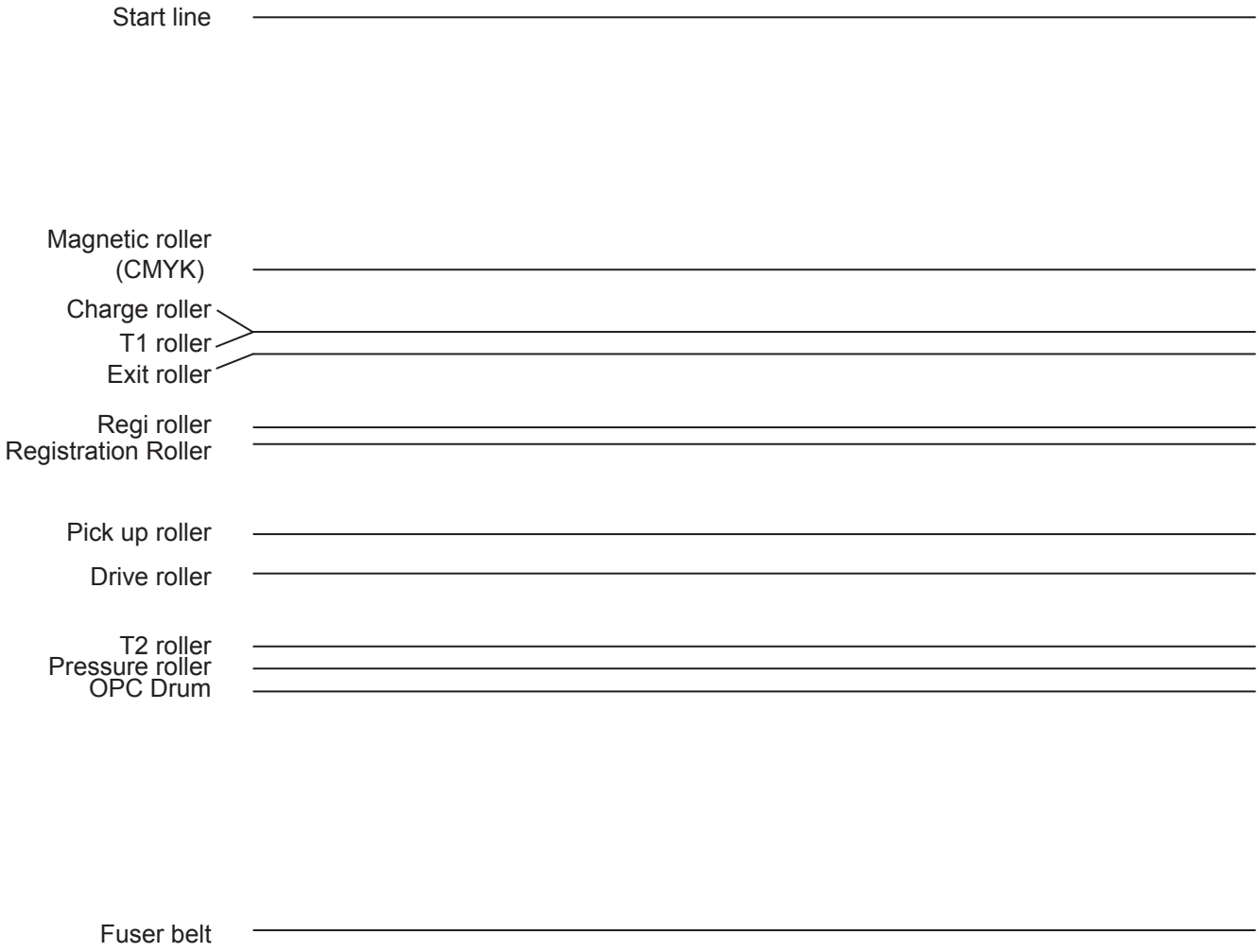
4.1.3 Abnormal Image Printing and Defective Roller

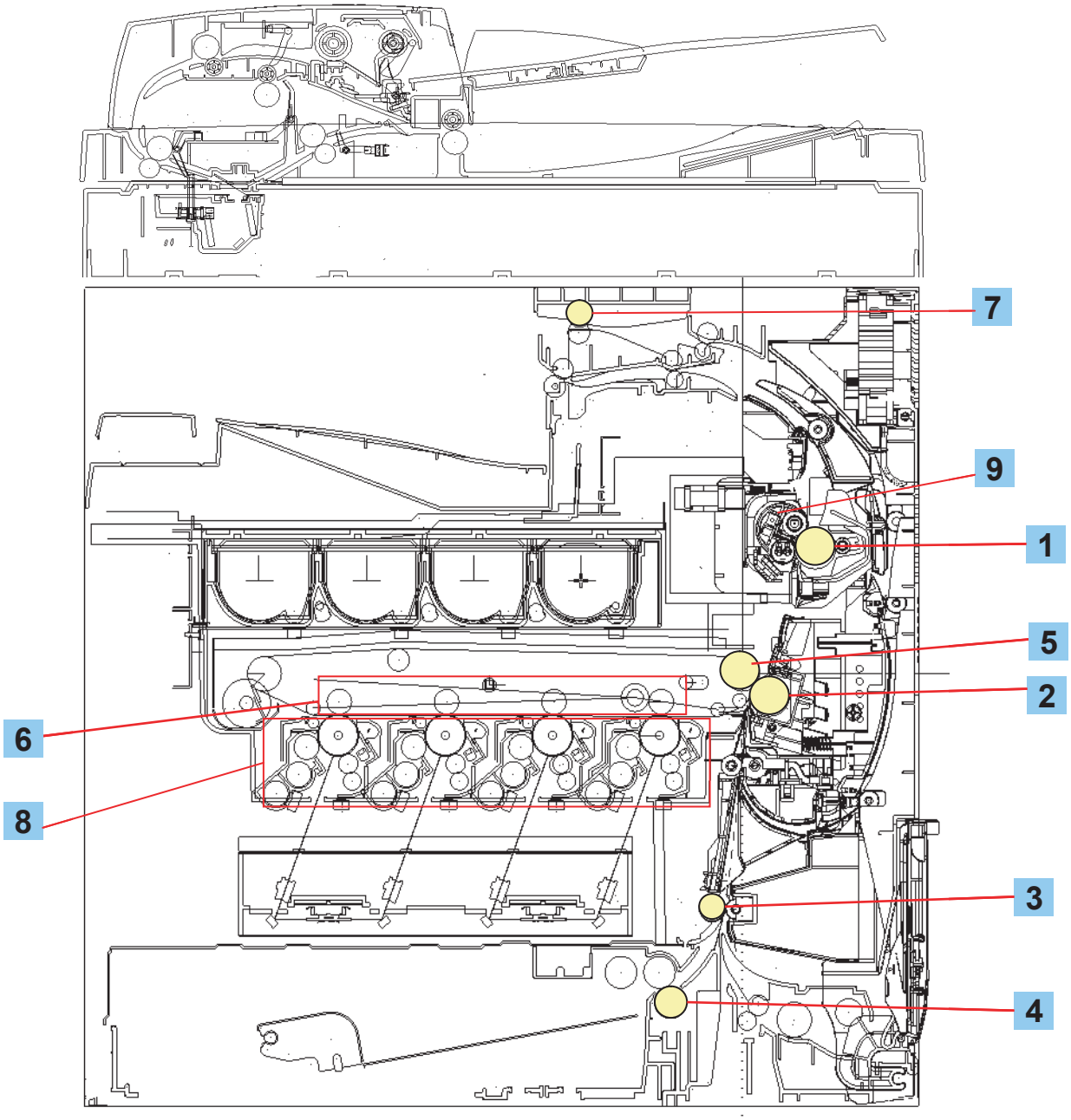
If a mark or other printing defect occurs at regular intervals down the page, it may be caused by a damaged or contaminated roller. Make sure the repetition interval by consulting the table below.
If the roller is dirty, try to clean it. If the problem is still occurred after cleaning the roller, replace the part including the defective roller.

NO	Roller	Period (mm)	Phenomenon	Replace part
1	Pressure Roller	91.1	Offset, Spot, Line Burst	Fuser Unit
2	T2 Roller	88.0	White and Black Spot, Periodic Banding, Rear Side Paper Dirty	Transfer Roller
3	Registration Roller	59.7	Roll Mark	-
4	Pick-up Roller	72.3	Roll Mark	-
5	Drive Roller	77.8	Periodic Banding, Color Registration	ITB Unit
6	T1 Roller	44.0	White and Black Spot, Periodic Banding	ITB Unit
7	Exit Roller	47.1	Roll Mark, Vertical Scratch	-
8	OPC Drum	94.3	White and Black Spot, Periodic Banding, Ghost, Color Registration	Imaging Unit
	Charger Roller	44.0	White and Black Spot, Periodic Banding	Imaging Unit
	Magnetic Roller (K)	35.3	Periodic Banding	Imaging Unit
	Magnetic Roller (YMC)	35.3	Periodic Banding	Imaging Unit
9	Fuser Belt	127.7	Waving, Offset, Spot, Line Burst	Fuser Unit
10	ITB	785.4	White and Black Spot, Periodic Banding	ITB Unit

■ Repetitive defect Image check page

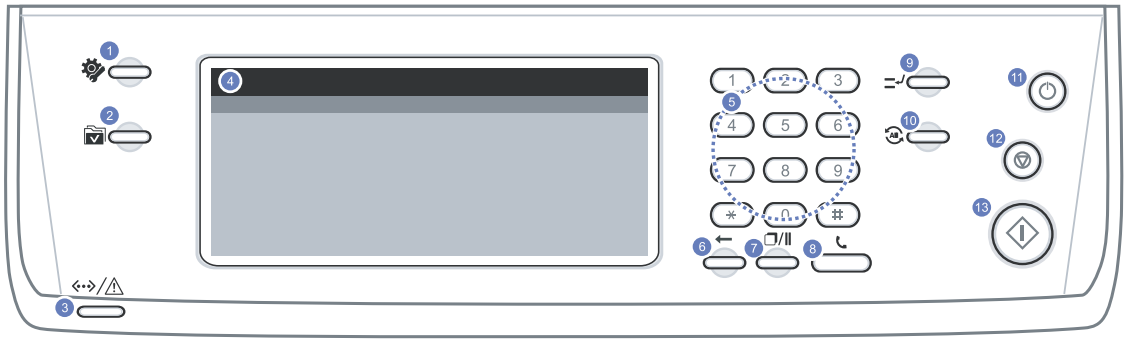
Print this page. Align the this page and the printed defect image and find the defective roller.





No	Description	No	Description
1	ROLLER-PRESSURE(JC66-01412A)	6	ROLLER-TRANSFER(JC66-01513A)
2	ROLLER-TRANSFER(JC66-01505A)	7	Exit roller
3	ROLLER-REGIIDLE(JC66-01506A)	8	Cartridge Drum unit
4	RUBBER-ROLLER PU(JC73-00216A)	9	Fuser belt
5	ROLLER-DRIVE(JC66-01511A)		

4.1.4 Control Panel overview

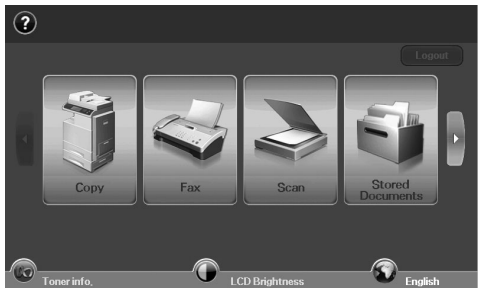


1		**Machine Setup**: Leads you to the machine setup and advanced settings.
2		**Job Status**: Shows the jobs currently running, queued jobs or completed jobs.
3		**Status**: Shows the status of your machine.
4	**Display screen**: Displays the current machine status and prompts during an operation. You can set menus easily using the touch screen.	
5	**Numeric keypad**: Dials fax number, and enters the number value for document copies or other options.	
6		**Clear**: Deletes characters in the edit area.
7		**Redial/Pause**: In standby mode, redials the last number, or in edit mode, inserts a pause into a fax number.
8		**On Hook Dial**: Engages the telephone line.
9		**Interrupt**: Stops a job in process to do an urgent copy job.
10		**Clear All**: Reverts the current settings to the default values.
11		**Power Saver**: Sends the machine into the power saver mode. You can also turn the power on and off with this button.
12		**Stop**: Stops an operation at any time. The pop up window appears on the screen showing the current job that the user can stop or resume.
13		**Start**: Starts a job.

4.1.4.1 Introducing the touch screen and useful buttons

Touch screen

The touch screen allows for user-friendly operation of the machine. Once you press the home icon ( ) on the screen, it shows the Main screen.



- : Shows Help. You can find the explanation by feature contents.
- Copy: Enters the Copy menu.
- Fax: Enters the Fax menu. (Optional)
- Scan: Enters Scan to Email, NetScan, Scan to Server menu.
- Stored Documents: Enters the Stored Documents menu.
- USB: When USB memory is inserted into the USB memory port on your machine, USB icon shows on the display screen.
- SmarThru Workflow: Enters the SmarThru Workflow menu. (Optional)
- Toner Info.: Shows amount of toner used.
- LCD Brightness: Adjusts the brightness of the touch screen.
- : You can change the display language.
- : Guides you to remove the USB memory devices from the machine. Follow the instruction on the LCD. This icon appears only when you connect an USB memory module.
- Logout: Logs out from the currently logged in account.

Machine Setup button

When you press Machine Setup button, you can browse current machine settings or change machine values.

- This button allows you to move to Copy, Fax, Scan, Stored Documents menu directly.
- Machine Status: Shows the current status of the machine.
- Admin Setting: Allows an administrator to set up the machine.
- Usage Page Report:You can print the report on the amount of printouts depending on the paper size and type.

Job Status button

When you press Job Status button, the screen shows the lists of currently running jobs, queued jobs and completed jobs.

- Current Job tab: Shows the list of jobs in progress and pending.
- Completed Job tab: Provides the list of completed jobs.
- Active Notice tab: Displays any error codes that have occurred.
- No.: Gives the order of jobs.
- Job Name: Shows job information like name and type.
- Status: Gives the current status of each job.
- User: Provides user name, mainly computer name.
- Job Type: Displays details of the active job, such as job type, recipient phone number and other information.
- Detail: Shows the detailed information of the selected option on the Current Job, Completed Job and Active Notice list.
- Delete: Removes the selected job from the list.
- Delete All: Removes all the jobs from the list.
- Close: Closes the job status window and switches to previous view.

Power Saver button

When the machine is not in use, save electricity with the provided power save mode. Pressing this button puts the machine into power save mode.
If you press Power Saver button for more than two seconds, a window appears, requesting that you turn the power off. If you choose Yes, the power is turned off.
This button can also be used to turn the button on.

Status		Description
Off		• The machine is not in the power save mode. • The machine is in the low power save mode.
Blue	On	machine is in the power save mode.
	Blink	The machine is in the ready power save mode.

Interrupt button

When you press Interrupt button, the machine goes into interrupt mode which means it stops a printing job for urgent copy job. When the urgent copy job completes, the previous printing job continues.

Status		Description
Off		The machine is not in interrupt printing mode.
Blue	On	The machine is in interrupt printing mode.

4.1.5 Understanding the Status LED

When the problem occurs, the Status LED indicates the machine's condition by the light color of it's action.

• Status

Status		Description
Off		• The machine is off-line. • The machine is in power save mode. When data is received, or any button is pressed, it switches to on-line automatically.
Green	On	The machine is on-line and can be used.
	Blinking	• When the backlight slowly blinks, the machine is receiving data from the computer. • When the backlight blinks rapidly, the machine is printing data.
Red	On	• The imaging unit is totally out of lifespan. Remove the old imaging unit and install a new one. • The toner cartridge is totally empty. Remove the old toner cartridge and install a new one. • A paper jam has occurred. • The cover is opened. Close the cover. • There is no paper in the tray. Load paper in the tray. • The machine has stopped due to a major error. Check the display message. • The waste toner container not installated in the machine, or full waste toner container.
	Blinking	• A minor error has occurred and the machine is waiting the error to be cleared. Check the display message. When the problem is cleared, the machine resumes. • The toner cartridge is near the end of its life. Order a new toner cartridge. You can temporarily improve print quality by redistributing the toner.

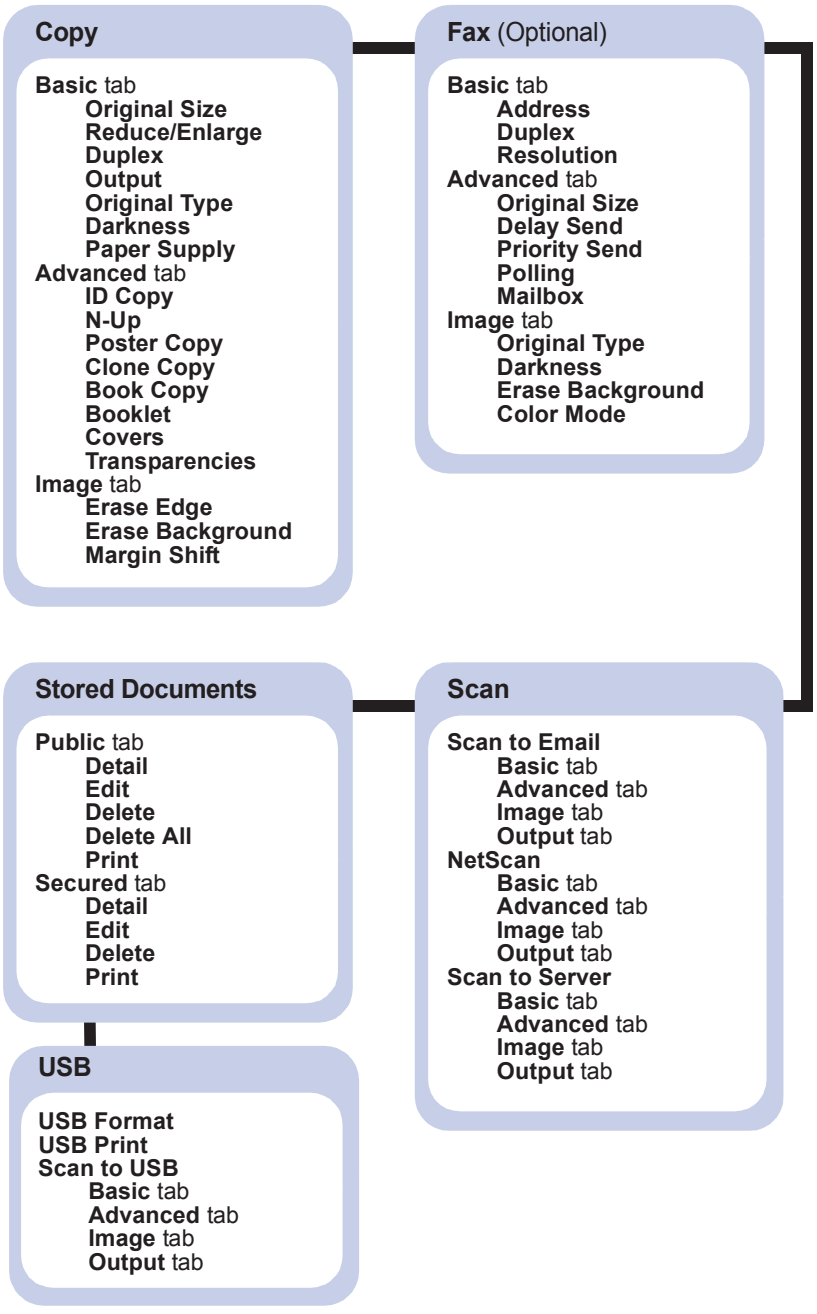
4.1.6 Menu overview

4.1.6.1 Menu Map

The control panel provides access to various menus to set up the machine or use the machine's functions. These menus can be accessed by pressing Machine Setup, Job Status or touching menus on the display screen. Refer to the following diagram.

Main screen

The Main screen is shown on the display screen on the control panel.
Some menus are grayed out depending on your model.



Machine Setup button

When you press the Machine Setup button on the control panel, the screen displays three menus. Machine Status shows the supplies life, billing, counters and reports. Admin Setting lets you set the advanced setup to use your machine in depth and conveniently. Usage Page Report can print the report on the amount of printouts depending on the paper size and type.

Machine Status

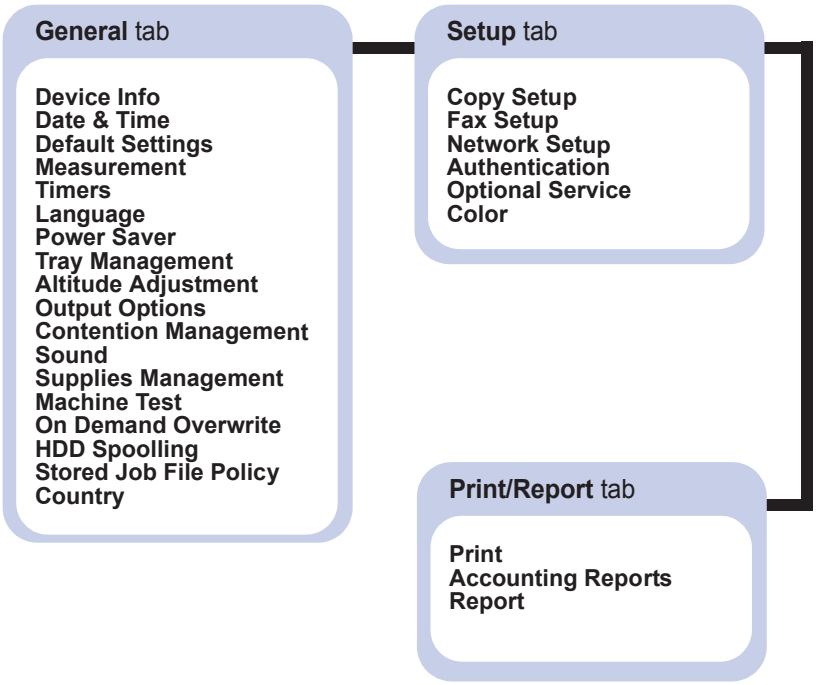
Supplies Life tab

- Toner Cartridge-C
- Toner Cartridge-M
- Toner Cartridge-Y
- Toner Cartridge-K
- Imaging Unit-C
- Imaging Unit-M
- Imaging Unit-Y
- Imaging Unit-K
- Fuser Kit
- Feed Roller Kit-Tray 1
- Feed Roller Kit-Tray 2
- Feed Roller Kit-Tray 3
- Feed Roller Kit - Bypass Tray
- Document Feeder Roller
- BTR Kit
- DADF Friction Pad Kit

Machine Info. tab

- Machine Details
  - Customer Support
  - Machine Serial Number
  - Hardware Options
    - Configuration
  - Software Versions
- Tray Status
  - Tray
  - Status
  - Paper Size
  - Paper Type
- Print/Report
  - System Report
  - Scan Report
  - Fax Report
- Usage Counters
  - Total Impressions
  - Black Impressions
  - Black Copied Impressions
  - Black Printed Impressions
  - Color Impressions
  - Color Copied Impressions
  - Color Printed Impressions
  - Sheets
  - Copied Sheets
  - Copied Sheets
  - Color Copied Sheets
  - Printed Sheets
  - Black Printed Sheets
  - Color Printed Sheets
  - 2 Sided Sheets
  - Copied 2 Sided Sheets
  - Black Copied 2-Sided Sheets
  - Color Copied 2-Sided Sheets
  - DADF Scan Page Counts
  - Platen Scan Page Counts
  - Printed 2 Sided Sheets
  - Black Printed 2-Sided Sheets
  - Color Printed 2-Sided Sheets
  - Analog Fax Sheets
  - Analog Fax 2-Sided Sheets
  - Fax Image Received
  - Analog Fax Images Sent
  - Analog Fax Images Received
  - Images Sent
  - Network Scanning Images Sent
  - Email Images Sent
  - Maintenance Impressions
  - Black Maintenance Impressions

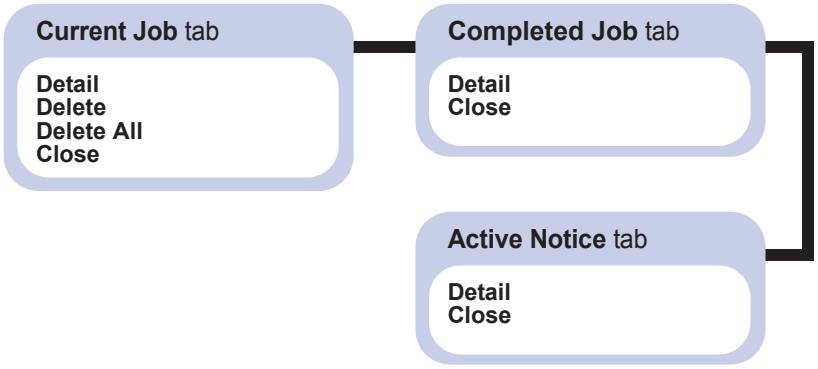
Admin Setting



Usage Page Report
When the display " Are you sure you want to print it" shows, press Yes.

Job Status button

This menu shows the job in process, in waiting, in completed and the notice message such as an error.



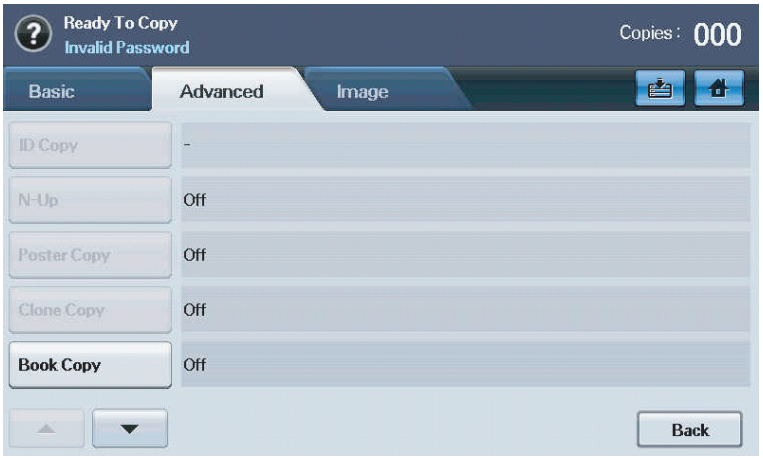
4.1.6.2 Understanding the Copy screen

When you press Copy on the Main screen, the Copy screen appears which has several tabs and lost of copying options. All the options are grouped by features so that you can configure your selections easily. If the screen displays an other menu, press Home button to go to the Main screen. If you want to know more information for copy screen, please consult the user manual.

Basic Tab

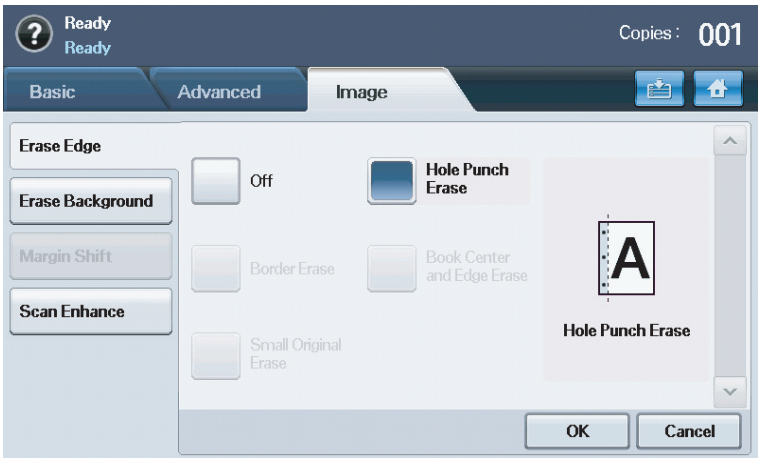
- Original Size : Selects the size of the originals.
- Reduce/Enlarge : Reduces or enlarges the size of a copied image.
- Duplex : Sets the machine to print copies on both sides of the paper.
- Output : Selects Collated or Uncollated copy options. If you install the optional stacker & stapler, then the staple related option appears.
- Text, Text/Photo, Photo, Magazine : Improves the copy quality by selecting the document type for the current copy job.
- Color, B/W : You can switch this copy mode between Color mode and B/W mode. Selects whether the user print copies in mono or color.
- Light, Dark : Adjusts the brightness level to make a copy that is easier to read, when the original contains faint markings and dark images.
- Paper Supply : Selects the paper supply tray.
- Erase Edge : Allows you to erase punch holes, staple marks, and fold creases along any of the four documents edges.
- Erase Background : Prints an image with no background.
- Margin Shift : Creates a binding edge for the document.
- Scan Enhance : Use this feature for the better quality of copyoutput.

Advanced Tab



- ID Copy: Prints 2-sided originals on one sheet of paper. This feature is helpful for copying a small-sized item, such as a business card.
- N-Up: Prints 2 or 4 original images, reduced to fit onto one sheet of paper.
- Poster Copy: Prints a large image into divided 9 pages.
- Clone Copy: Prints multiple image copies from the original document on a single page.
- Book Copy: Allows you to copy an entire book.
- Booklet: Creates booklets from a sequential set of either 1-sided or 2-sided originals.
- Covers: Automatically adds covers to your copied set using stock taken from a different tray.
- Transparencies: Adds a blank or printed divider between transparencies within a set.

Image Tab



- Erase Edge: Allows you to erase punch holes, staple marks, and fold creases along any of the four documents edges.
- Erase Background: Prints an image with no background.
- Margin Shift: Creates a binding edge for the document.
- Scan Enhance: Use this feature for the better quality of copyoutput.

4.1.6.3 Understanding the FAX screen

When you press Fax on the Main screen, the Fax screen appears which has several tabs and lost of fax options. All the options are grouped by features so that you can configure your selections easily.If the screen displays an other menu, press Home button to go to the Main screen. If you want to know more information for Fax screen, please consult the user manual.

Basic Tab

- Fax number input area : Shows the recipient's fax number using the number keypad on the control panel. If you configured the phone book, press Individual or Group.
- Add No : Lets you add more destinations.
- ← : Deletes the last digit entered.
- C : Removes all digits of the selected entry.
- Remove : Removes the selected fax number entry.
- Remove All : Removes all the fax numbers in the input area.
- Address : Picks up the frequently used fax numbers directly from your machine or from SyncThru Web Service.
- Duplex : Selects whether the machine send faxes one side of the original, both sides of the original.
- Resolution : Adjusts the resolution options.

Advanced Tab

- Original Size: Selects the size of the original document. Press OK to update current setting.
- Delay Send: Sets the machine to send a fax at a later time without your intervention.
- Priority Send: Sends an urgent fax before reserved operations.
- Polling: Used when the receiver requests the document to be faxed remotely at sender's absence or vice versa. In order to use the polling function, the originals must be previously stored in the machine.
- Mailbox: Used to store a received fax or originals in the machine memory which are ready to be polled. You can use a mailbox on the same machine you are using, or the one on a remote machine. Each mailbox has a corresponding mailbox number, name and password.
- Back: Returns to the Basic tab.

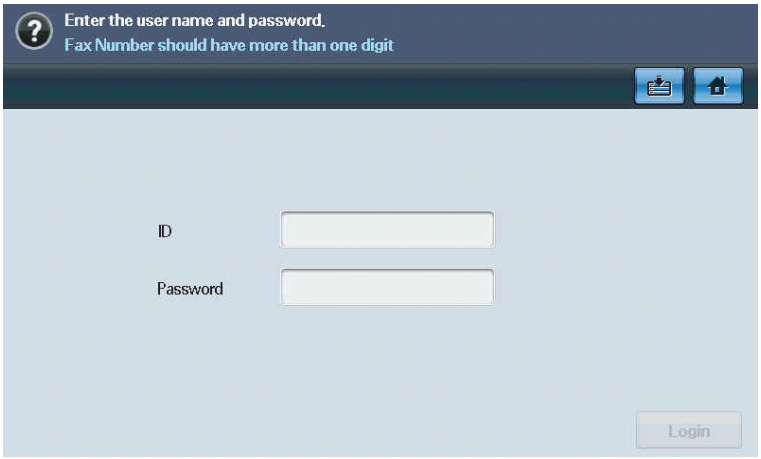
Image Tab

- Original Type: Enhances the fax quality based on the type of the original document being scanned.
- Darkness: Adjusts the level of lightness or darkness of the fax.
- Erase Background: Reduces dark backgrounds or paper patterns as in newspaper originals.
- Color Mode: Selects whether the user sends the fax in mono or color.
- Back: Returns to the Basic tab.

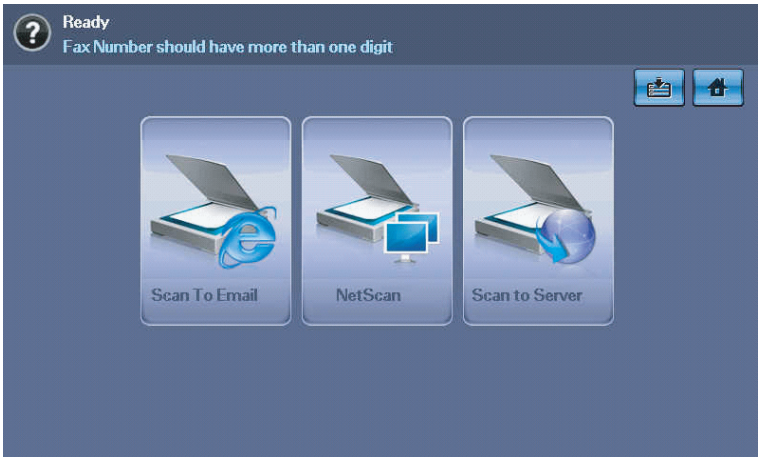
4.1.6.4 Understanding the SCAN screen

To use the scanning feature, press Scan on the Main screen. If the screen displays an other menu, press home button to go to the Main screen.

If the message asking Auth. ID and Password, it means the network administrator has set the authentication in SyncThru Web Service.



Press Scan to Email, NetScan or Scan to Server.

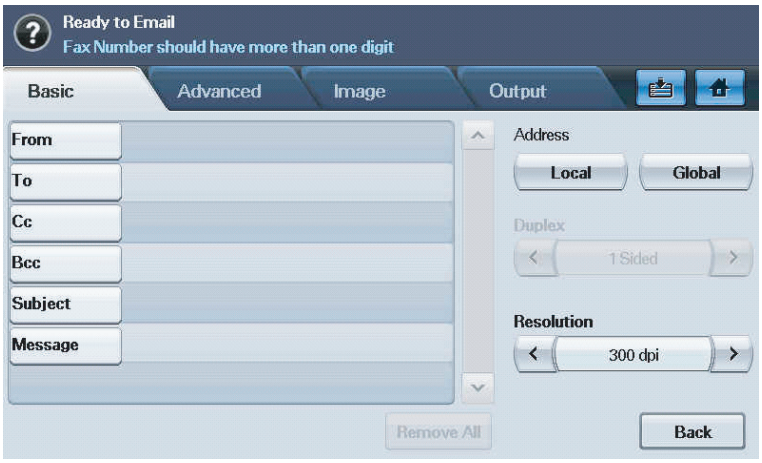


- Scan to Email: Scans and sends the scanned output to the destination by email.
- NetScan: Scans and sends the scanned output to the destination with the Samsung Network Scan Manager program.
- Scan to Server: Scans and sends the scanned output to the destination with SMB and FTP.

Basic tab

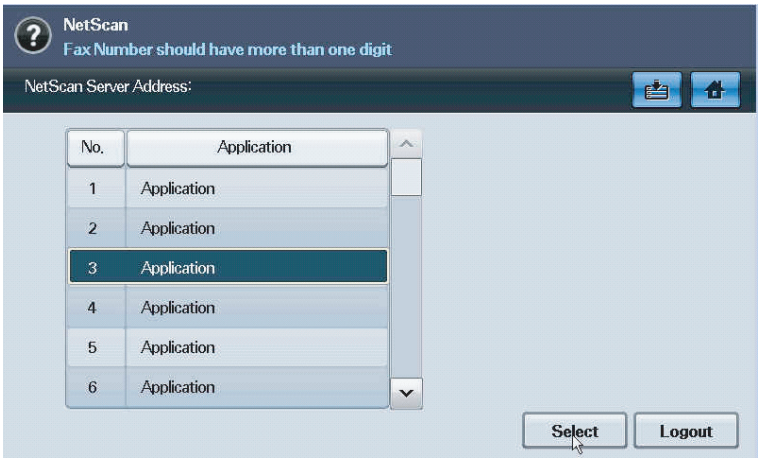
This section explains the Basic tab of Scan to Email and Scan to Server, and NetScan's basic screen.

- Scan to Email



- From: Sender's email address.
- To/Cc/Bcc: Recipients' addresses. Cc is for copies to an additional recipient and Bcc is for the same as Cc but without their name be displayed.
- Subject/Message: Subject and message of the email.
- Remove All: Erases everything in the input area.
- Address: Inputs the recipient's address just by pressing stored addresses. You can store frequently used email addresses from your computer using the SyncThru Web Service.
- Duplex: Selects whether the machine scans on one side of the paper (1 Sided), both sides of the paper (2 Sided), or both sides of paper but back is rotated 180 degrees (2 Sided, Rotate Side 2).
- Resolution: Selects the scanning resolution value.
- Back: Returns to the previous screen. If the network authentication is enabled, the log off confirmation message popes up and closes Scan to Email.

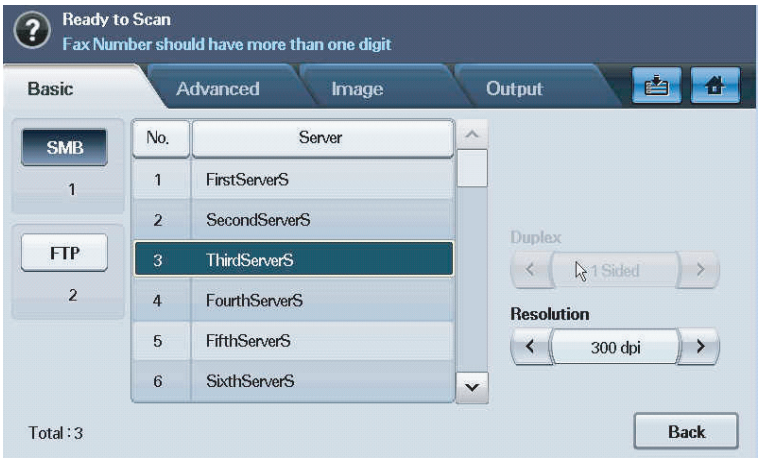
- NetScan



If the authentication for network appears, you have to enter user name and password to enter the NetScan screen.

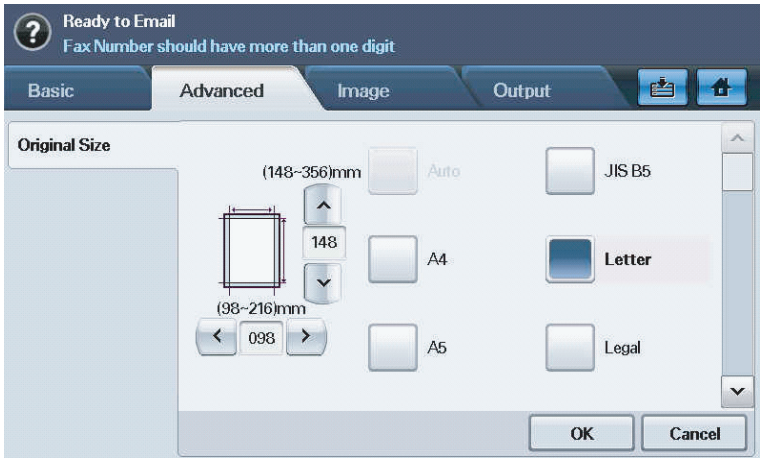
- No.: Lists the number in order for application programs.
- Application: Shows the available application programs from your computer.
- Select: Moves to the application program you have selected.

- Scan to Server



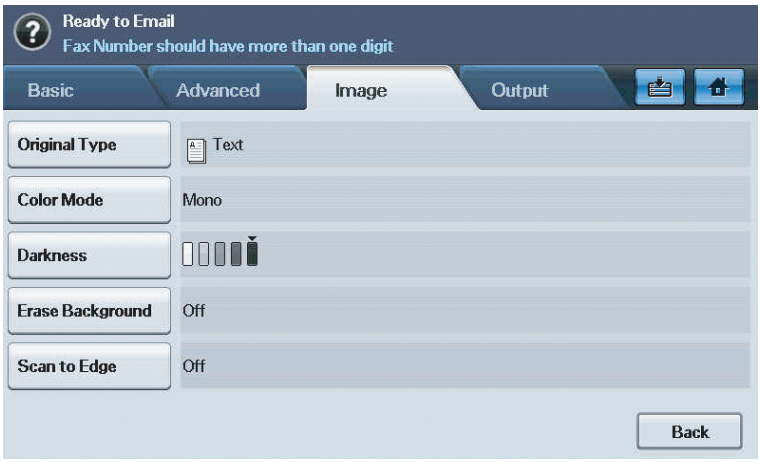
- SMB: Sends the scanned file to SMB. Press SMB for that option.
- FTP: Sends the scanned file to FTP. Press FTP for that option.
- No.: Index number which you entered in SyncThru Web Service.
- Server: Alias name which you entered in SyncThru Web Service.
- Duplex: Selects whether the machine scans on one side of the paper (1 Sided), both sides of the paper (2 Sided), or both sides of paper but back is rotated 180 degrees (2 Sided, Rotate Side 2).
- Resolution: Selects the scanning resolution value.
- Back: Returns to the previous screen.
- Quality: Adjusts the display quality of the scan output.
- File Format: Selects the file format of the scan output.
- Scan Preset: Automatically changes some scan options such as file format, resolution, and more. You can adjust options to fit each specific purpose.
- Back: Returns to the previous screen.

Advanced tab



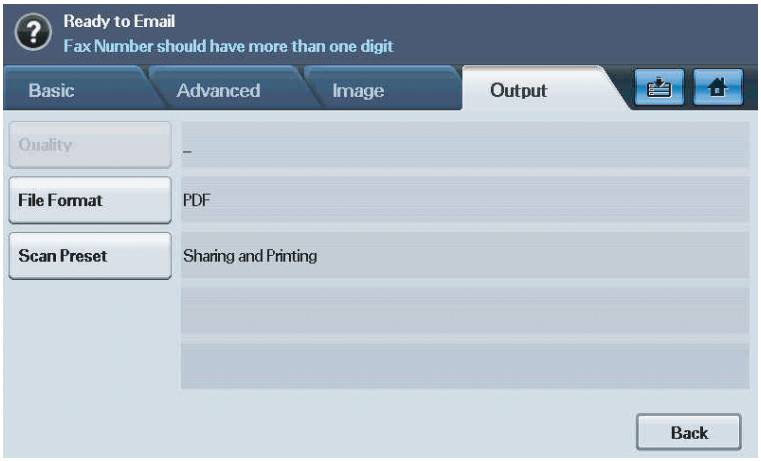
- Original Size: Sets the originals to a specific fixed size. • Back: Returns to the previous screen.

Image tab



- Original Type: Selects whether the original is text or photo.
- Color Mode: Adjusts the color options of the scan output. If the original is color and you want to scan in color, press Color Mode.
- Darkness: Adjusts the degree of darkness of the scan output. Use left/right arrow to adjust the values.
- Erase Background: Erases backgrounds like paper patterns.
- Scan to Edge: Scans originals from edge-to-edge.
- Back: Returns to the previous screen.

Output tab



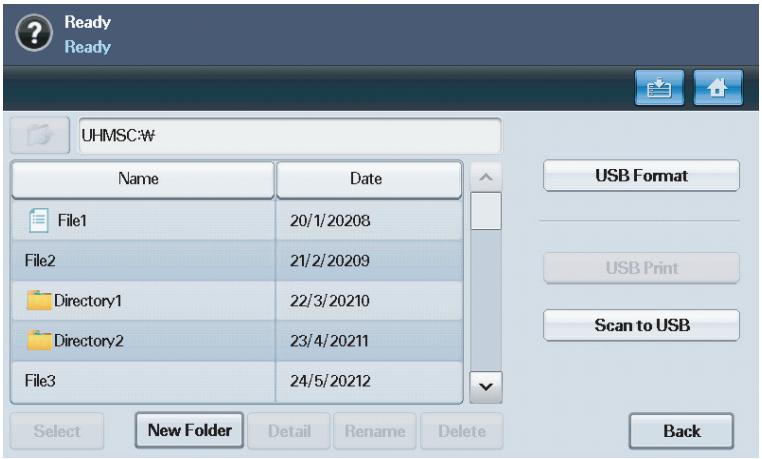
- Quality: Adjusts the display quality of the scan output.
- File Format: Selects the file format of the scan output.
- Scan Preset: Automatically changes some scan options such as file format, resolution, and more. You can adjust options to fit each specific purpose.
- Back: Returns to the previous screen.

4.1.6.5 Understanding the Stored Documents screen

- Public tab : Shows the job list of delay print and store print job.
- Secured tab : Shows the job list of secure print, secure receive, and secure store print job.
- User Name : Shows the user name who registered the job.
- File Name : Shows the job name which is registered as the job information. For the computer printing, the file name shows.
- Date : Shows the date of the job registered.
- Page : Shows the total page number of the job.
- Detail : Pops the separate message showing the basic job information with the file size, the paper size and the paper type, as well.
- Edit : Lets you to modify the file name.
- Delete : Deletes the selected list.
- Delete All : Deletes all the list.
- Print : Prints the selected list.

4.1.6.6 Understanding the USB screen

When USB memory is inserted into the USB memory port on your machine, USB icon shows on the display



- USB Format: You can delete image files stored on an USB memory device one by one or all at once by reformatting the device.
- USB Print: You can directly print files stored on an USB memory device. You can print TIFF, BMP, JPEG, PDF, and PRN files.
- Scan to USB: You can specify image size, file format, or color mode for each scanning to USB job.

4.1.7 Firmware Upgrade

• USB and Network port are used to F/W upgrade.
• Network applications (SWAS, SWS) can be used for network port upgrade.

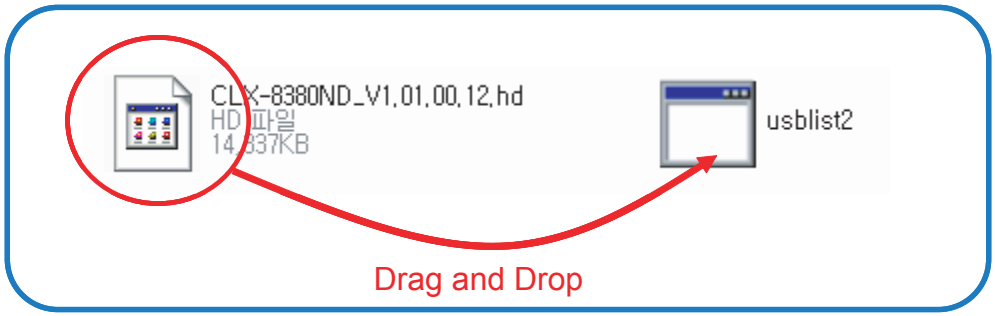
4.1.7.1. Using the common method

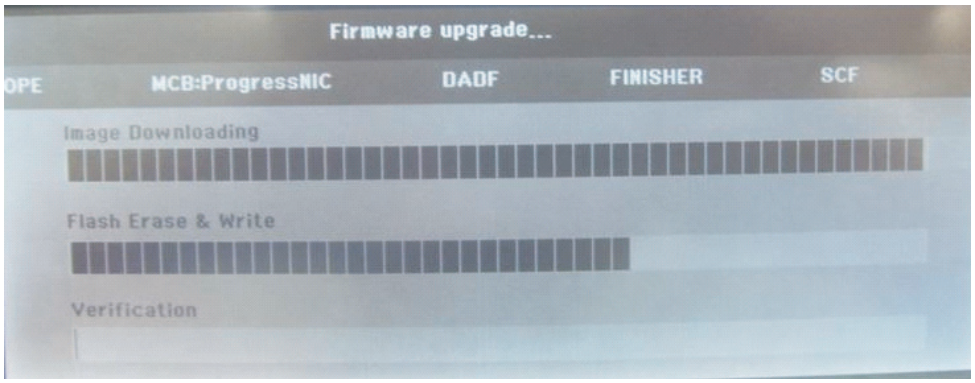
① Download the firmware file in the temporary folder. And unzip the file.

② Delete all current jobs from Job Status window

③ Connect USB cable in the machine (idle state)

④ Send firmware file(*.hd) by usblist2
- Drag the f/w file and Drop down on the usbprn2.exe. And then f/w update will be started automatically.



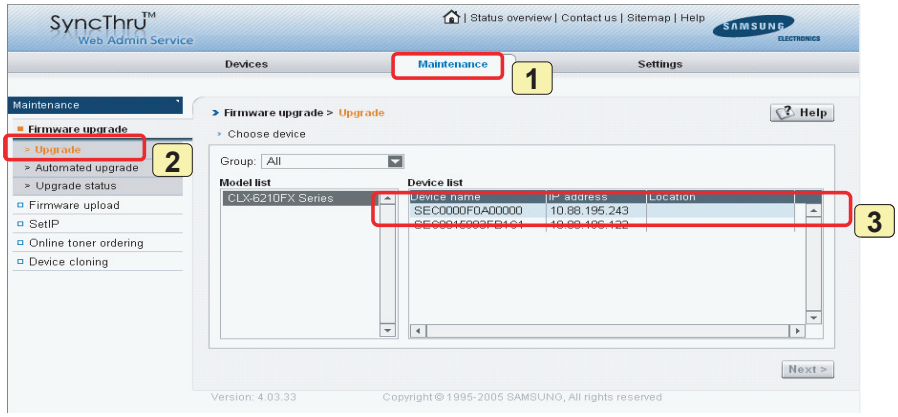


⑤ Please wait until end reboot.

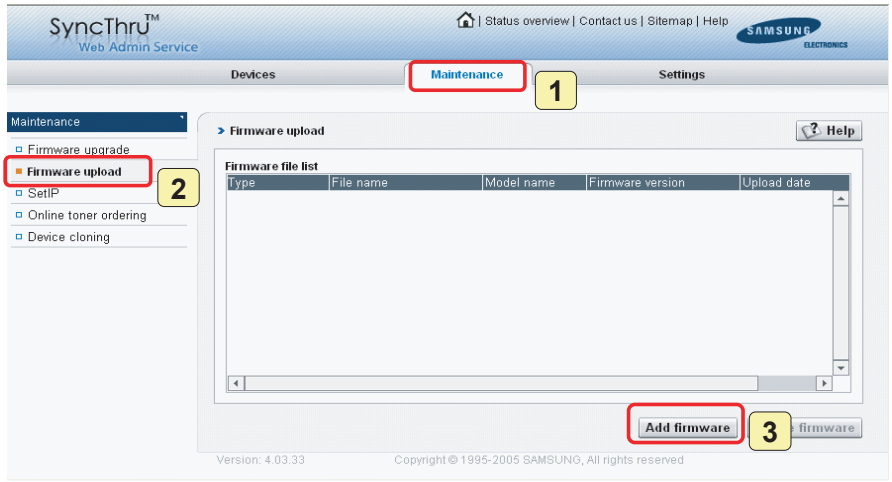
4.1.7.2. F/W upgrade using SWAS (SyncThru Web Admin Service)

- Start the SWAS program.
  (Windows Start menu > Programs > Samsung Netowork Printer Utilities > SyncThru Web Admin Service)

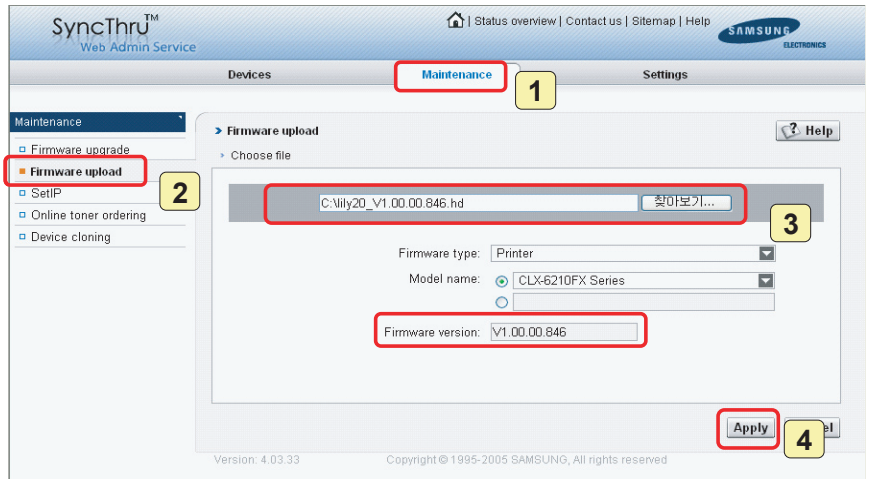
① Firmware Upgrade → Upgrade (check device using IP address)



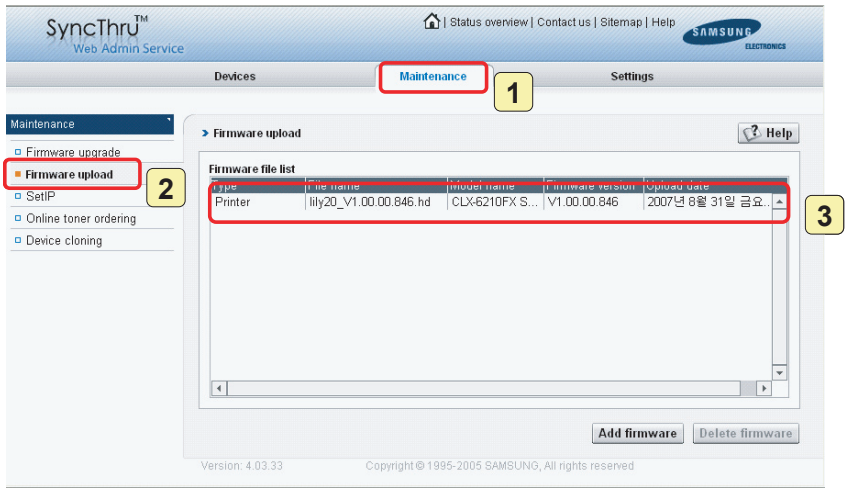
② Maintenance → Firmware upload (register firmware)



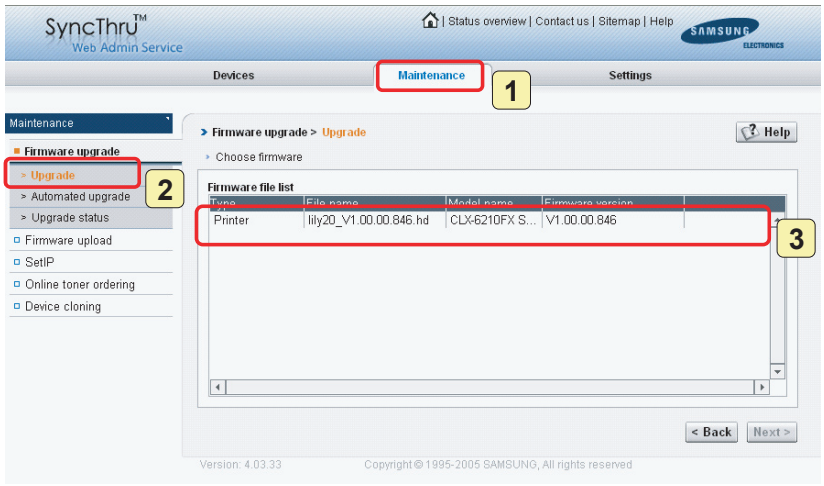
③ Maintenance → Firmware Upload (upload firmware)



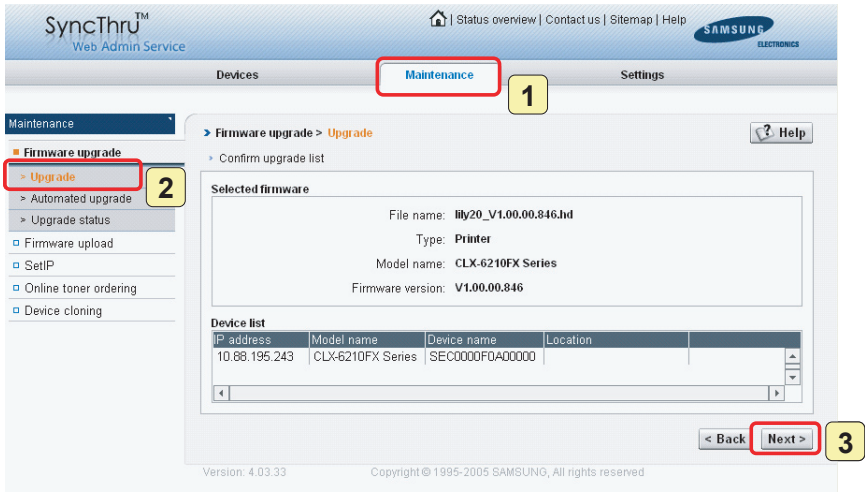
④ Maintenance → Firmware Upload (confirm uploaded firmware)



⑤ Maintenance → Firmware Upgrade → Upgrade (choose firmware)

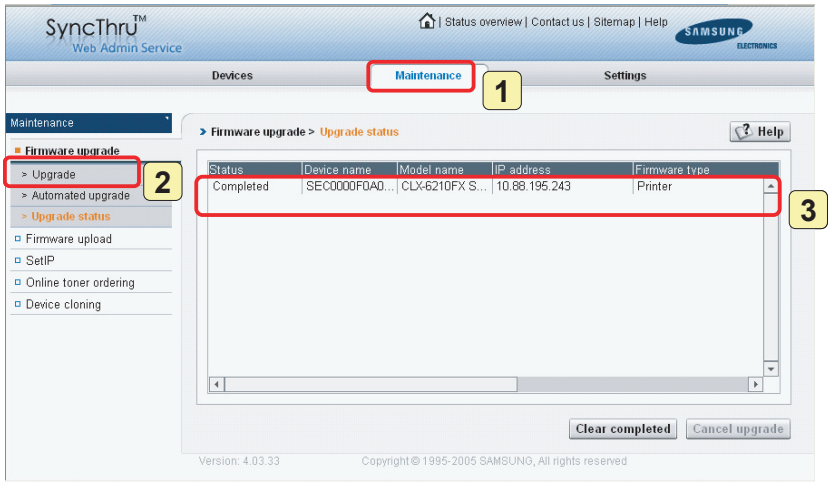


⑥ Maintenance → Firmware Upgrade → Upgrade (choose firmware)



⑦ Maintenance → Firmware Upgrade → Upgrade

⑧ Maintenance → Firmware Upgrade → Upgrade (Done)



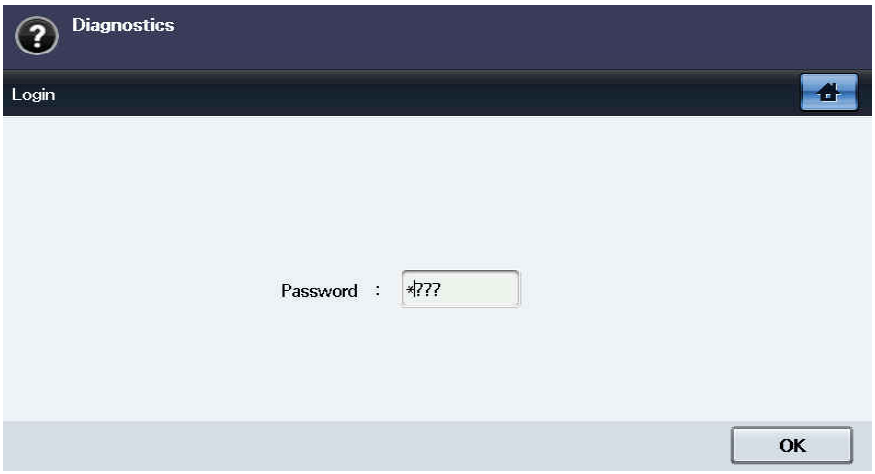
4.1.8 Diagnostics

4.1.8.1 Introduction

This document will capture the behavior specifications for the GUI Windows for Diagnostics. Each section of this document describes one feature with a step window image and script.
However, used window image is not fixed image from the specification point of view. Acquire detail information from script. Window image is just example image will be implemented.

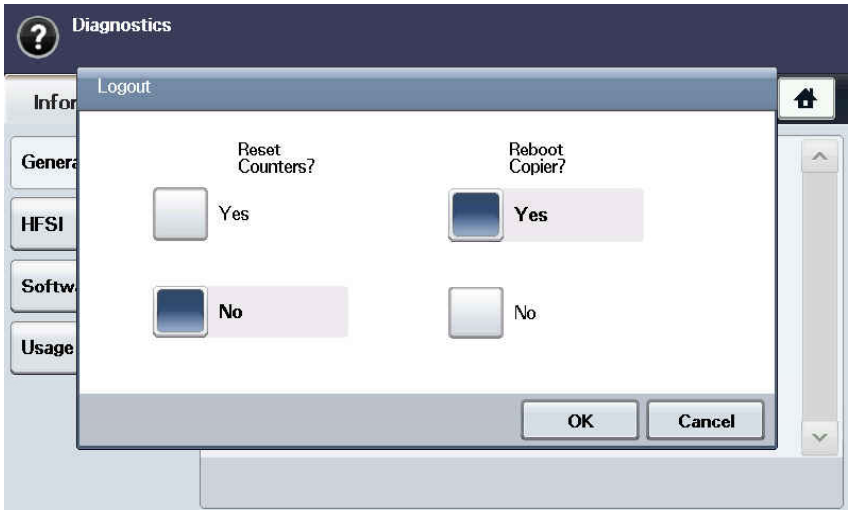
4.1.8.2 How to enter diagnostics mode

1. Press 3*4 key(1, 2, 3) simultaneously.
2. Enter password(1934).
3. Press 'OK' button.

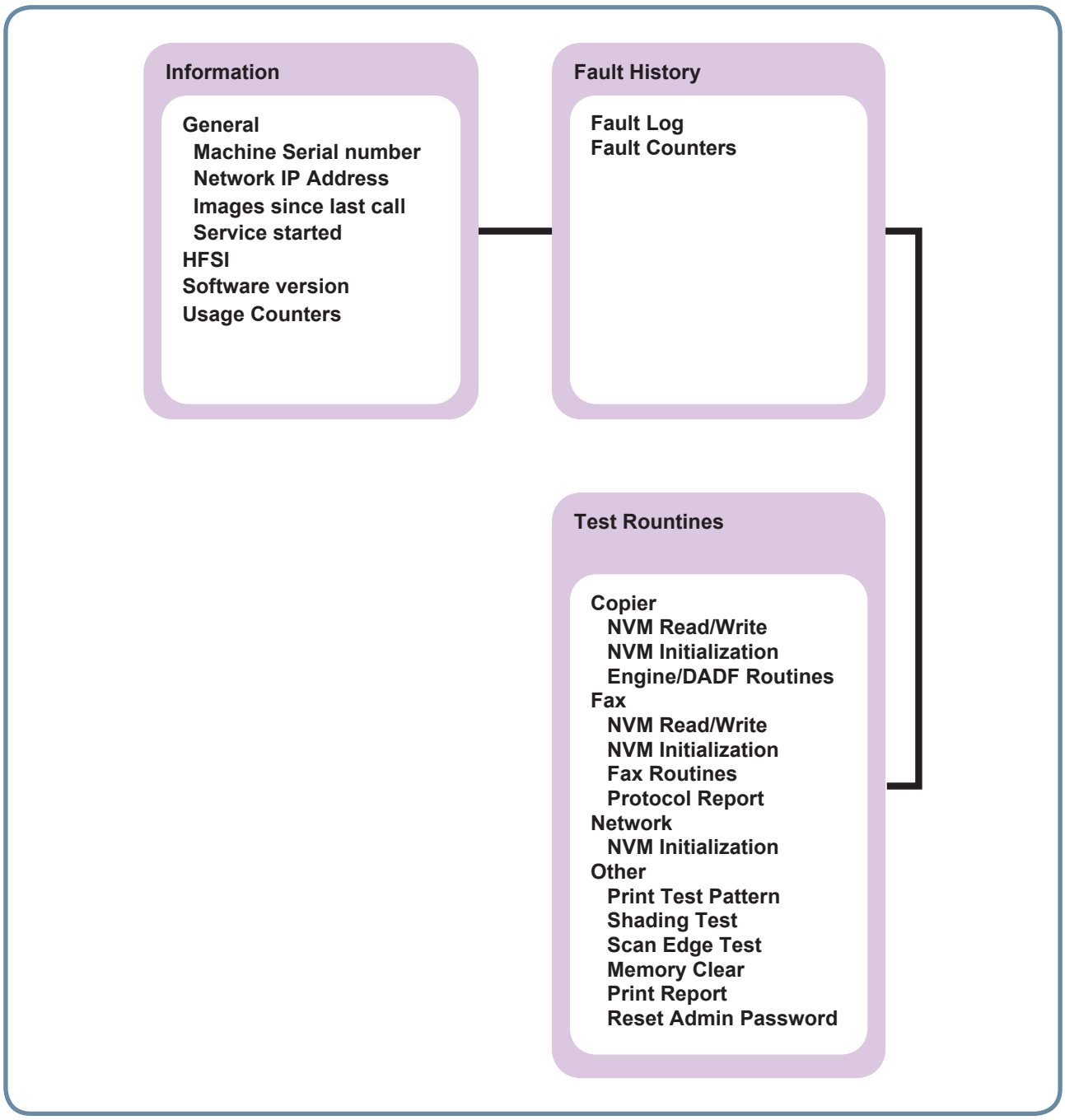


4.1.8.3 How to exit diagnostics mode

By pressing the Home button, exit Diagnostics mode.
When exit Diagnostics mode, a popup window shall display.
By default, Reset Counters is No, Reboot Copier is Yes.



4.1.8.4 Diagnostics Menu Map



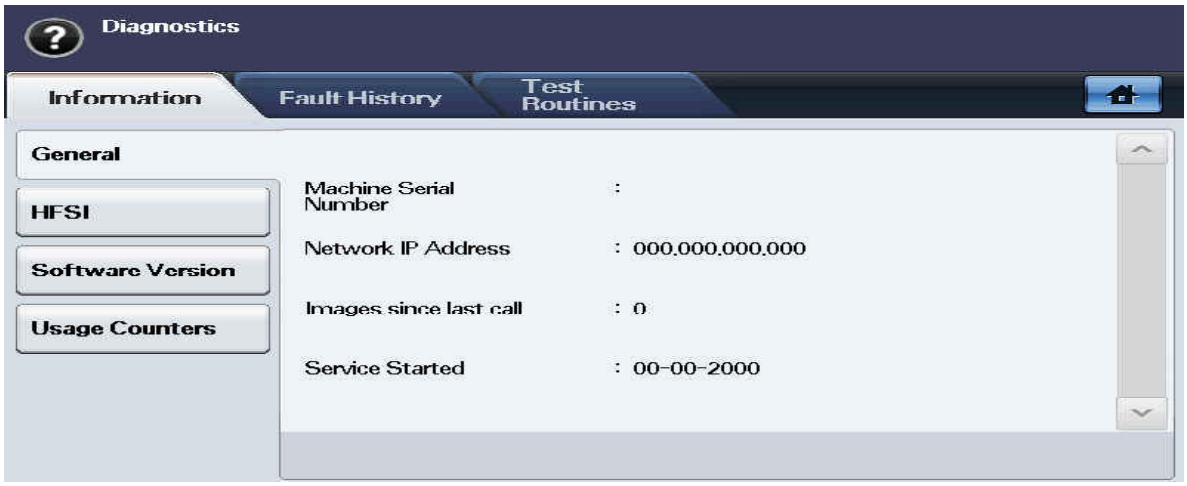
4.1.8.5 Information Tab

Information tab provides detail information of the machine.

General

• Diagnostics>Information>General

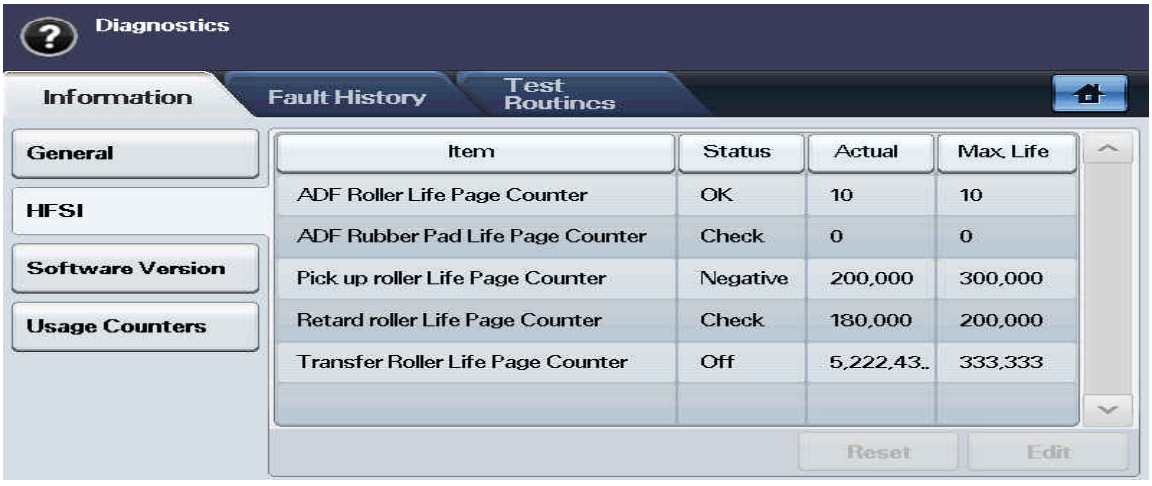
• When user selects General, OP displays Machine Serial Number, Network IP Address and Images since last call.



HFSI (High Frequency Service Items)

• Diagnostics>Information>HFSI

• When user selects General, OP displays the list of HFSI(High Frequency Service Items) read from the MCB.
In the list, there are " Item", "Status", "Actual", and "Max Life".



• User Behavior
- User can select one item in the list to reset the counter using “Reset” button or to edit the Max.Life and threshold value using “Edit” button.

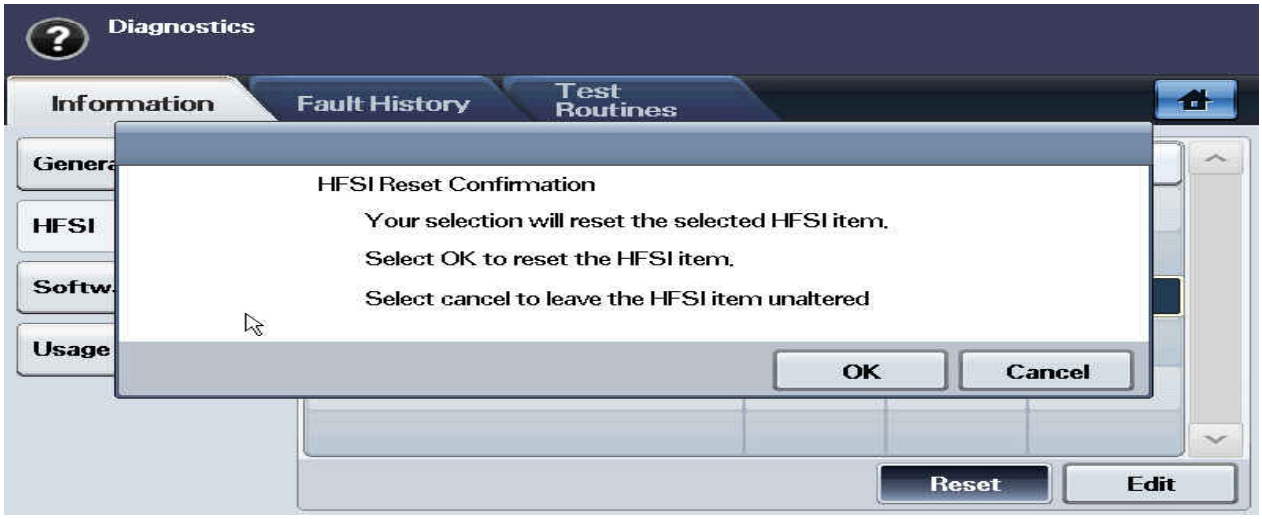
• Items in this column are:
DADF Roller / Rubber Pad Life Page
T1/T2/T3 P-up Roller Life Page
Retard Roller Life Page
Bypass Rubber Pad Life page
Transfer Roller Life Page
Fuser Roller / Fuser Unit Life Page
Heat Roller Life Page
Pressure Roller Life Page

• Status
- The possible values in this column are ‘OK’, ‘Check’, ‘Negative’ and ‘Off’.
- OK : Actual counter is smaller than the threshold value
- Check : Actual counter is bigger than threshold value but smaller than Max.Life
- Off : Actual counter exceeds Max.Life
- Negative : There is no counter to display. In this case, it shall display ‘-‘ in the Status and Max Life column.

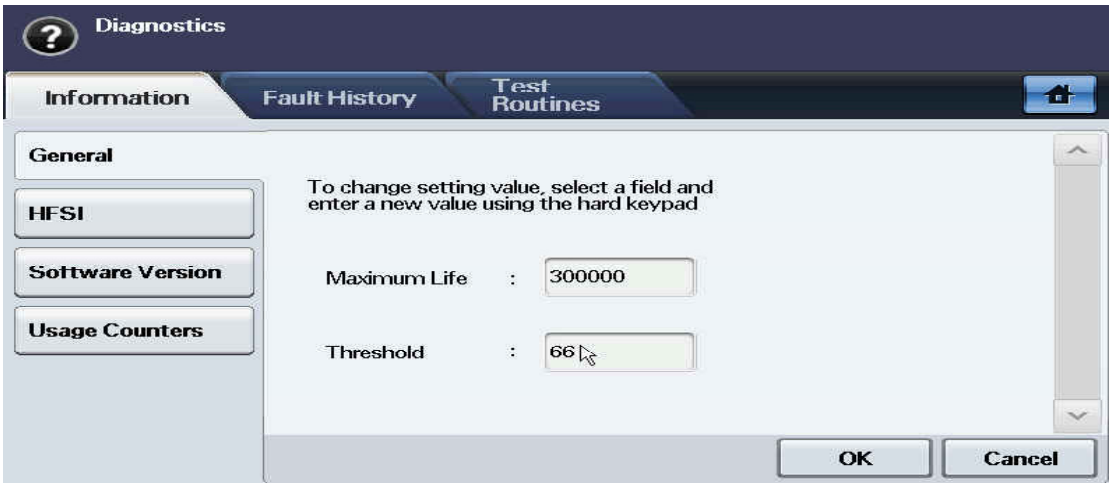
• Actual
- Values in this column are actual counts for HFSI usage

• Max. Life
Values in this column are maximum life limits set for HFSI.

• Reset
This button is used to reset the actual counter after replacing the HFSI unit.
This button is disabled before user select one item in the list and enabled once user select any of the items in the list.
Once user presses, a confirmation window shall display to user confirm again. The window is displayed as below.
If user confirms reset, it will reset the counter to 0.
If the counter of selected item is 0, ‘Reset’ button shall be disabled.



• Edit
"Edit" button is disabled until user select one item in the list.
Selecting "Edit" button causes edit window to be displayed.
There are two input filed for 'Maximum Life' and for 'Threshold'.



Each data field shall display default value or the last-saved value entered by the service engineer. The data field shall support the numeric characters of 0 to 9.
The hard keypad characters of '#', 'phone' and '*' are not supported and shall generate an invalid entry message if selected.
The hard keypad characters of 'c' shall delete all characters displayed within the selected data field. By selecting 'Cancel', window moves back to HSFI window without saving user's setting. By selecting 'OK' button, window moves back to HSFI window saving user's setting. Threshold value shall not be greater than Maximum Life.

Software Version

• Diagnostics>Information>Software Version
• When user selects Software version, OP displays the version of the Main Controller, Image Output Terminal, User Interface, Network Controller, Document Feeder, Tray 2 Firmware, Tray 3 Firmware

Usage Counter

• Diagnostics>Information>Usage Counter
• When user selects Usage Counter, OP displays the amount of the Items shown below.

- Total Impressions
- Black Impressions
- Black Copied Impressions
- Black Printed Impressions
- Color Impressions
- Color Copied Impressions
- Sheets
- Copied Sheets
- Black Copied Sheets
- Color Copied Sheets
- Printed Sheets
- Black Printed Sheets
- Color Printed Sheets
- 2 Sided Sheets
- Copied 2 Sided Sheets
- Black Copied 2 Sided Sheets
- Color Copied 2-Sided Sheets
- Printed 2 Sided Sheets
- Black Printed 2 Sided Sheets
- Color Printed 2 Sided Sheets
- Fax Images Received
- Images Sent
- Server Fax Images Sent
- Network Scanning Images Sent
- Email Images Sent
- Maintenance Impressions
- Black Maintenance Impressions
- Known Jams in the IOT
- Known Jams in Finishing Device(s)
- Attempted Sheet Feeds from Internal trays
- Actual sheet feeds from Internal trays
- Normal Level Power On Hours
- Power Save Hours
- Attempted Original Sheet Feeds in the DADF

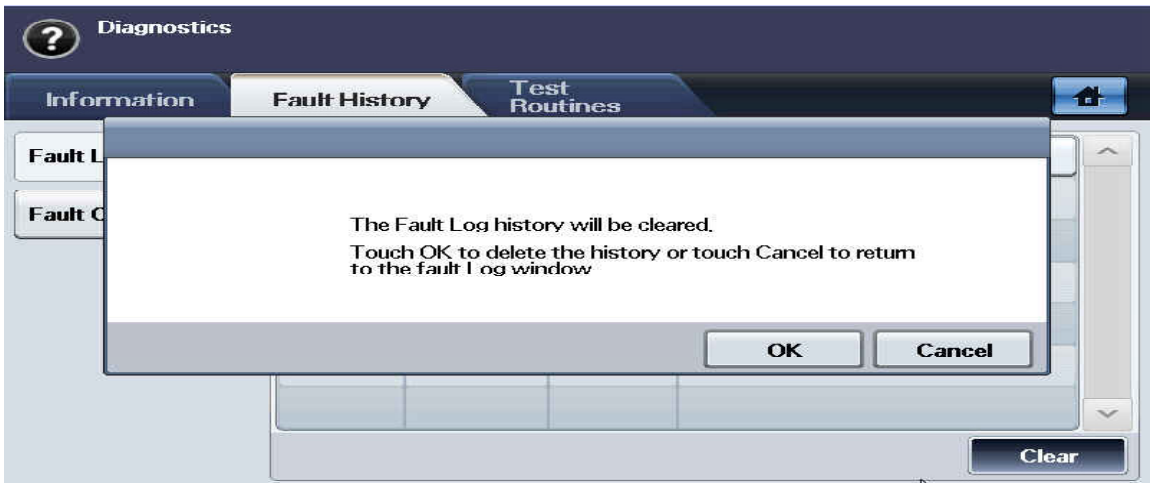
4.1.8.6 Fault History Tab

Fault History provides an error information occurred.

Fault Log

• Diagnostics>Fault History>Fault Log
• Fault log window shall display errors occurred while the product was operating.

• Diagnostics>Fault History>Fault Log>Clear
• When selecting “Clear” button, Pop-up will be displayed. If you want to delete the Fault history, touch the “OK” button.

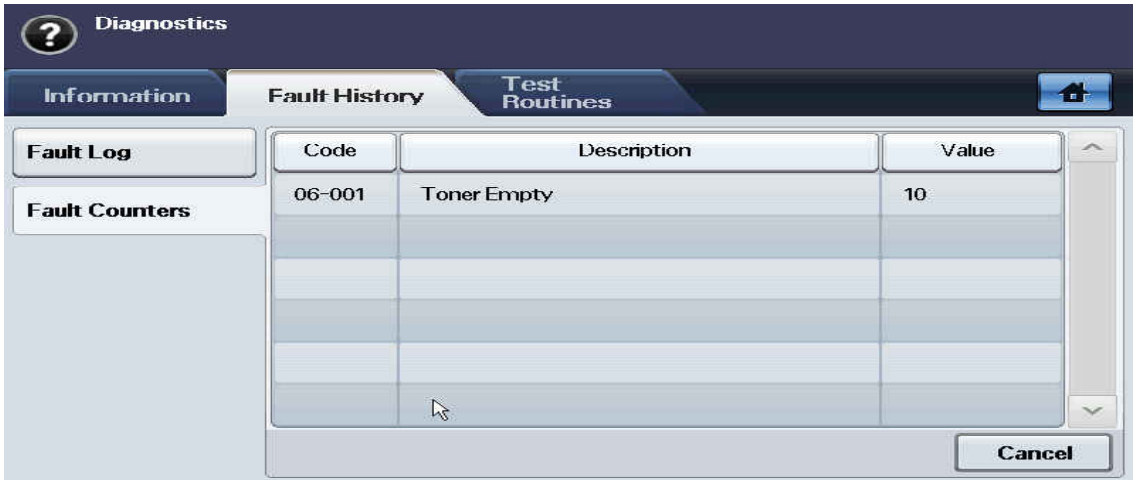


Fault Counters

• Diagnostics>Fault History>Fault Counters
• Fault counters window displays Fault group with number and name.
They are

- 01 Feeder
- 02 Fuser
- 03 Motor Fan
- 04 LSU
- 05 Option Interface
- 06 CRU
- 07 Finisher
- 08 DADF
- 09 FDI
- 10 Controller
- 11 Scanner
- 12 Mismatch Type
- 13 Network
- 14 Cloning
- 18 Memory State
- 21 Tray
- 24 MSOK

User shall select one item in the list at a time and multiple selection shall not supported. User can select ‘Non Zero’ or ‘All’. By default, ‘Non Zero’ shall be selected.
When press ‘OK’, Fault Counters Detail Window shall be displayed.



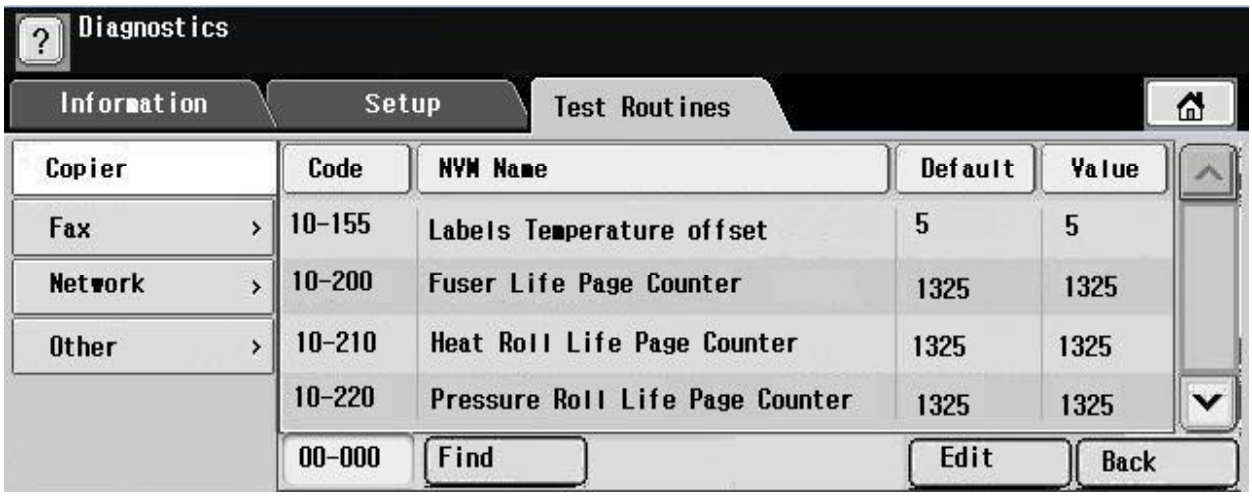
Fault Counters Detail window shall display Fault code, description and value (counter) among the selected Fault Group. Items of displayed Fault codes are different based on the selection of 'Non Zero' or 'All'. When selected 'Non Zero', Fault codes in the selected Fault Group having non zero counter shall be displayed. When selected 'All', all Fault codes in the selected Fault Group shall be displayed. Display order of Fault code is upward.

4.1.8.7 Test Routines Tab

4.1.8.7(a) Copier

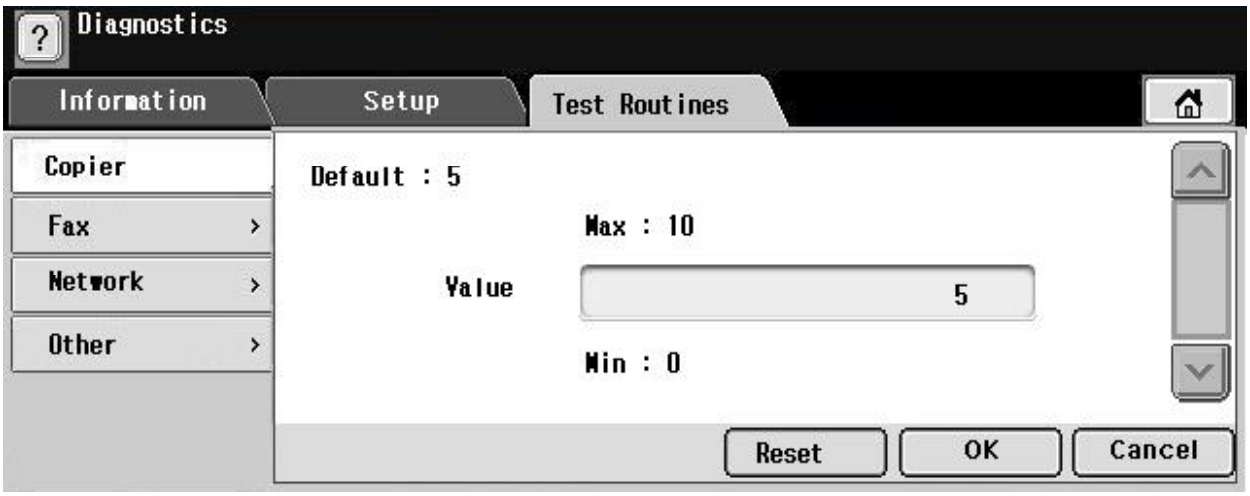
NVM Read/Write

• Diagnostics>Test Routines>Copier>NVM Read/Write



"Edit" button shall be disabled until any NVM item is selected.
"Edit" button shall be disabled when read only NVM is selected. Search edit box has 00-000 as a default. User shall input the whole number to find a specific NVM by pressing Find button. (Refer to NVM Read/Write table) If matching NVM is found, the page including the specified NVM shall be displayed and the NVM is shown as selected. If matching NVM is not found, error message such as "Invalid NVM number" shall be displayed on the status area and search edit box displays default number.

• Diagnostics>Test Routines>Copier>NVM Read/Write>Edit



• NVRAM Read / Write code table

0~4	Reserved
5	DADF
6~19	Reserved
20	FAX
100	Engine(Motor)
101	Engine(Clutch & Actuator)
102	Engine(Paper Handling)
103	Engine(Timing)
104	Engine(Consumables)
105	Engine(Charger)
106	Engine(Developer)
107	Engine(Transfer)
108	**Engine(Environment)**
109	Engine(Fixing)
110	Engine(LSU)
111	Engine(Toner)
112	Engine(ACR)
113	Engine(Option/Finisher)
114	Engine(Option/SCF)
115	Engine(Option/Reserved)
116	Engine(Option/Reserved)
117	**Engine(CTD)**
118~255	Reserved

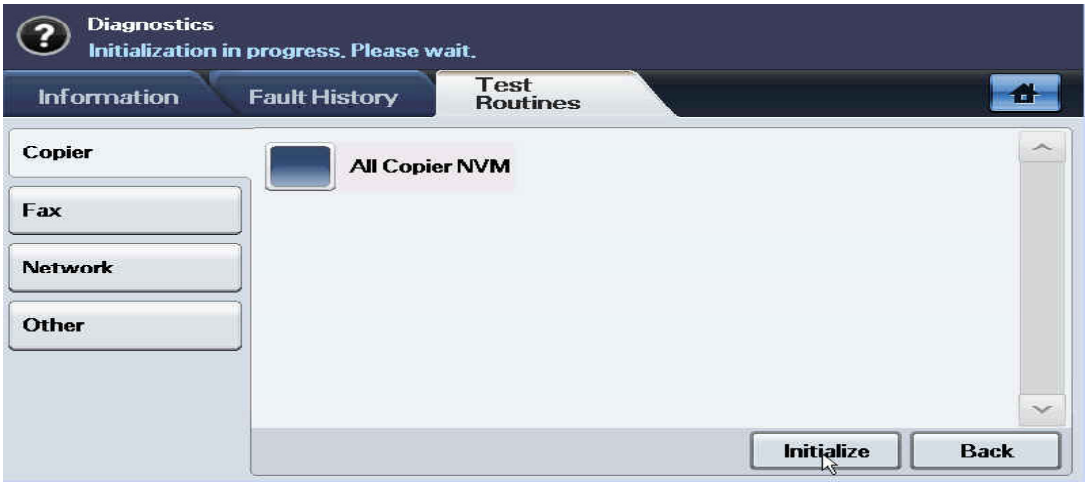
Code	NVM Description	Meaning
103-0000	Pick Up Start Time	psync ~ and pick up
103-0010	Regi Off Time	regi sensor on ~ regi clutch off
103-0021	Option Clutch On Time	Option feed sensor on ~ Option clutch on
103-0030	Delay Time of Feed Clutch On	regi clutch on ~ feed clutch on
104-0000	Pick up roller Life Page Counter	Pick up roller Life Page Counter
104-0010	Forward roller Life Page Counter	Forward roller Life Page Counter
104-0020	Retard roller Life Page Counter	Retard roller Life Page Counter
104-0030	T2 Pick-Up Roller Life Page Counter	T2 Pick-Up Roller Life Page Counter
104-0040	T3 Pick-Up Roller Life Page Counter	T3 Pick-Up Roller Life Page Counter
104-0060	Bypass Rubber Pad Life Page Counter	Bypass Rubber Pad Life Page Counter
104-0190	Transfer Roller Life Page Counter	Transfer Roller Life Page Counter
104-0210	Fuser Life Page Counter	Fuser Life Page Counter
105-0000	MHV DC Yellow	Charger HV Yellow DC Duty
105-0010	MHV DC Magenta	Charger HV Magenta DC Duty
105-0020	MHV DC Cyan	Charger HV Cyan DC Duty
105-0030	MHV DC Black	Charger HV Black DC Duty
105-0040	MHV DC Low Yellow	Charger HV Yellow Low DC Duty
105-0050	MHV DC Low Magenta	Charger HV Magenta Low DC Duty
105-0060	MHV DC Low Cyan	Charger HV Cyan Low DC Duty
105-0070	MHV DC Low Black	Charger HV Black Low DC Duty
105-0080	MHV VPP Yellow	Charger HV Yellow VPP Duty
105-0090	MHV VPP Magenta	Charger HV Magenta VPP Duty
105-0100	MHV VPP Cyan	Charger HV Cyan VPP Duty
105-0110	MHV VPP Black	Charger HV Black VPP Duty
105-0120	MHV AC Yellow	Charger HV Yellow AC Duty
105-0130	MHV AC Magenta	Charger HV Magenta AC Duty
105-0140	MHV AC Cyan	Charger HV Cyan AC Duty
105-0150	MHV AC Black	Charger HV Black AC Duty
106-0000	Deve DC Yellow	Deve DC Yellow
106-0010	Deve DC Magenta	Deve DC Magenta
106-0020	Deve DC Cyan	Deve DC Cyan
106-0030	Deve DC Black	Deve DC Black
107-0000	Transfer1 High Voltage(THV) Yellow	Transfer1 HV Yellow Duty
107-0010	Transfer1 High Voltage(THV) Magenta	Transfer1 HV Magenta Duty
107-0020	Transfer1 High Voltage(THV) Cyan	Transfer1 HV Cyan Duty
107-0030	Transfer1 High Voltage(THV) Black	Transfer1 HV Black Duty
107-0040	Transfer1 High Voltage(THV) Low Yellow	Transfer1 Low HV Yellow Duty In None Image Area

Code	NVM Description	Meaning
107-0050	Transfer1 High Voltage(THV) Low Magenta	Transfer1 Low HV Magenta Duty In None Image Area
107-0060	Transfer1 High Voltage(THV) Low Cyan	Transfer1 Low HV Cyan Duty In None Image Area
107-0070	Transfer1 High Voltage(THV) Low Black	Transfer1 Low HV Black Duty In None Image Area
107-0080	Transfer2 High Voltage(THV2)	Transfer2 HV
107-0090	Transfer2 High Voltage(THV2) Duplex	Transfer2 HV of Duplex
107-0100	PreTransfer1 Duty	PreTransfer1 Duty
107-0110	PreTransfer2 Duty	PreTransfer2 Duty
107-0120	Saw Plate Duty	Saw Plate Duty
109-0000	Fuser Bias Duty	Fuser Bias Duty
110-0000	LD Power Yellow(Half)	Yellow Laser Light Level, Value in PWM at Half Speed
110-0010	LD Power Magenta(Half)	Magenta Laser Light Level, Value in PWM at Half Speed
110-0020	LD Power Cyan(Half)	Cyan Laser Light Level, Value in PWM at Half Speed
110-0030	LD Power Black(Half)	Black Laser Light Level, Value in PWM at Half Speed
110-0040	LD Power Yellow	Yellow LD Power at Normal Speed
110-0050	LD Power Magenta	Magenta LD Power at Normal Speed
110-0060	LD Power Cyan	Cyan LD Power at Normal Speed
110-0070	LD Power Black	Black LD Power at Normal Speed
111-0000	Toner Vcon Yellow	Toner Vcon Yellow
111-0010	Toner Vcon Magenta	Toner Vcon Magenta
111-0020	Toner Vcon Cyan	Toner Vcon Cyan
111-0030	Toner Vcon Black	Toner Vcon Black
111-0060	Toner THV1 Yellow	Upper control limit of yellow TC sensor
111-0070	Toner THV1 Magenta	Upper control limit of magenta TC sensor
111-0080	Toner THV1 Cyan	Upper control limit of cyan TC sensor
111-0090	Toner THV1 Black	Upper control limit of black TC sensor
111-0140	Toner Target Yellow	Yellow target TC sensor value
111-0150	Toner Target Magenta	Magenta target TC sensor value
111-0160	Toner Target Cyan	Cyan target TC sensor value
111-0170	Toner Target Black	Black target TC sensor value
112-0120	Manual Color Regi X-offset Yellow	Distant from hsync to lsync (multi-hsync) for yellow
112-0130	Manual Color Regi X-offset Magenta	Distant from hsync to lsync (multi-hsync) for Magenta

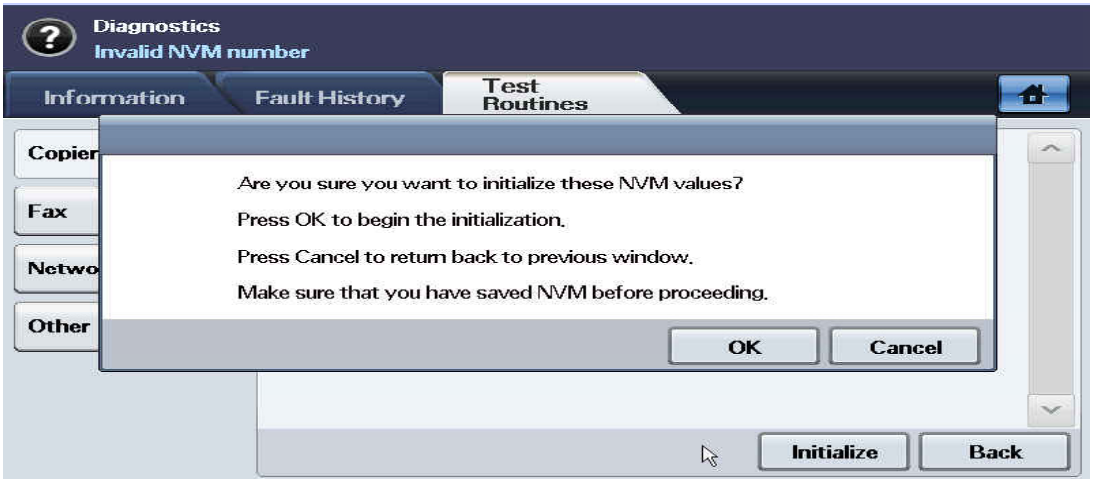
Code	NVM Description	Meaning
112-0140	Manual Color Regi X-offset Cyan	Distant from hsync to lsync (multi-hsync) for Cyan
112-0150	Manual Color Regi X-offset Black	Distant from hsync to lsync (multi-hsync) for Black
112-0160	Manual Color Regi Y-offset Yellow	Distant from psync to Image area for yellow
112-0170	Manual Color Regi Y-offset Magenta	Distant from psync to Image area for Magenta
112-0180	Manual Color Regi Y-offset Cyan	Distant from psync to Image area for Cyan
112-0190	Manual Color Regi Y-offset Black	Distant from psync to Image area for Black
112-0200	Manual Color Regi Width Yellow	Image Area Width for Yellow
112-0210	Manual Color Regi Width Magenta	Image Area Width for Magenta
112-0220	Manual Color Regi Width Cyan	Image Area Width for Cyan
112-0230	Manual Color Regi Width Black	Image Area Width for Black
117-0000	Total Condition On/Off for CTD	All Condition of CTD On/Off
117-0010	New Crum Condition On/Off for CTD	The Condition for New Crum of CTD On/Off
117-0020	Page Count Condition On/Off for CTD	The Condition for Page Count of CTD On/Off
117-0030	Page Count for CTD (Full)	Page Count for CTD (Full)
117-0040	Page Count for CTD (Short)	Page Count for CTD (Short)
117-0050	Minimum Compensation OD	Minimum Compensation OD
117-0060	Maximum Compensation OD	Maximum Compensation OD
117-0070	R_TRC Yellow	Reference TRC Value for Yellow
117-0080	R_TRC Magenta	Reference TRC Value for Magenta
117-0090	R_TRC Cyan	Reference TRC Value for Cyan
117-0100	R_TRC Black	Reference TRC Value for Black
117-0110	M_TRC Yellow	Measured TRC Value for Yellow
117-0120	M_TRC Magenta	Measured TRC Value for Magenta
117-0130	M_TRC Cyan	Measured TRC Value for Cyan
117-0140	M_TRC Black	Measured TRC Value for Black

NVM Initialization

• Diagnostics>Test Routines>Copier>NVM Initialization
• By default, none of items is selected and Initialize button shall be disabled.
There shall be Back button.



• Diagnostics>Test Routines>Copier>NVM Initialization>Initialize



If you want to initialize the NVM values, press OK button.
When press OK button, SR shall show the initialization progress status and result.
When the result is get, pop up window shall be disappeared.

Engine/DADF Test Routines

• Diagnostics>Test Routines>Copier>Engine/DADF Test Routines.

When exit this window, OP shall send exit command. (CMD_COPY_COMP_EXITMODE)
By default, all Test routines will be displayed.
By default, search edit box has 00 .
OK/Reset button shall be disabled until any test routine is selected.
Maximum number of selection is 3.
Reset will deselect all selected test routines.
User select test routine by touching the row and deselect touching it again.
User input chain number in search edit box and only all test routines in the chain shall be displayed.

By default, Start/Stop/Stop All shall be disabled.
Start button shall be enabled when selected item is not running.
Multiple selection shall not be supported.
Stop shall be enabled only when the selected item is running.
Stop All shall be enabled when there is any running test item.
Back button shall be disable when there is any running test item.

• Engine Diagnostic Contol(EDC) Menu

0~4	Reserved
5	DADF
6~19	Reserved
20	FAX
100	Engine(Motor)
101	Engine(Clutch & Actuator)
102	Engine(Paper Handling)
103	Engine(Timing)
104	Engine(Consumables)
105	Engine(Charger)
106	Engine(Developer)
107	Engine(Transfer)
108	**Engine(Environment)**
109	Engine(Fixing)
110	Engine(LSU)
111	Engine(Toner)
112	Engine(ACR)
113	Engine(Option/Finisher)
114	Engine(Option/SCF)
115	Engine(Option/Reserved)
116	Engine(Option/Reserved)
117	**Engine(CTD)**
118~255	Reserved

Code	Displayed Name	Meaning	State Displayed
100-0000	Main BLDC Motor	Main BLDC Motor is On/Off	On[Off]
100-0001	Main BLDC Motor Ready	Detect if Main BLDC Motor runs at normal speed	High[Low]
100-0002	Black OPC/DEV Motor	Black OPC/DEV BLDC Motor is On/Off	On[Off]
100-0003	Black OPC/DEV Motor Ready	Detect if Black OPC/DEV BLDC Motor runs at normal speed	High[Low]
100-0004	Color OPC Motor	Color OPC BLDC Motor is On/Off	On[Off]
100-0005	Color OPC Motor Ready	Detect if Color DEV BLDC Motor runs at normal speed	High[Low]
100-0006	Color DEV Motor	Color DEV BLDC Motor is On/Off	On[Off]
100-0007	Color DEV Motor Ready	Detect if Color DEV BLDC Motor runs at normal speed	High[Low]
100-0008	T1 Engage Motor	T1 Engage Motor On/Off	On[Off]

Code	Displayed Name	Meaning	State Displayed
100-0009	T1 Engae Sensor	Detect if the T1 Engage is On or Off.	High[Low]
100-0010	T2 Engage Motor	T2 Engage Motor On/Off	On[Off]
100-0011	T2 Engae Sensor	Detect if the T1 Engage is On or Off.	High[Low]
100-0012	Exit Motor Forward Fast	Exit Motor Forward Fast On/Off	On[Off]
100-0013	Exit Motor Forward Slow	Exit Motor Forward Slow On/Off	On[Off]
100-0014	Duplex Motor Forward	Duplex Motor Forward On/Off	On[Off]
100-0015	Duplex Motor Backward	Duplex Motor Backward On/Off	On[Off]
100-0016	Duplex Fan1 Run	Start/Stop Duplex Fan1 run	On[Off]
100-0017	Duplex Fan2 Run	Start/Stop Duplex Fan2 run	On[Off]
100-0018	Dupelx Fan1 Run Ready	Detects if Duplex Fan1 runs at normal speed.	High[Low]
100-0019	Dupelx Fan2 Run Ready	Detects if Duplex Fan2 runs at normal speed.	High[Low]
100-0020	T1 Elevating Motor	T1 Elevate Motor On/Off	On[Off]
100-0021	T2 Elevating Motor	T2 Elevate Motor On/Off (Optional)	On[Off]
100-0022	T3 Elevating Motor	T3 Elevate Motor On/Off (Optional)	On[Off]
100-0024	Waste Toner Motor	Waste Toner Motor On/Off	On[Off]
100-0025	Waste Toner Full Sensor	Detect if the waste toner is full or not.	High[Low]
100-0026	SMPS Fan Run	Start/Stop Deve. Fan run	On[Off]
101-0000	Bypass Feed Clutch	Engages drive to pick up a paper from bypass Tray(MP Tray).	On[Off]
101-0001	T1 Pick-Up Clutch	Engages drive to pick up a paper from tray1.	On[Off]
101-0002	T2 Pick-Up Clutch	Engages drive to pick up a paper from tray2. (Optional)	On[Off]
101-0003	T3 Pick-Up Clutch	Engages drive to pick up a paper from tray3. (Optional)	On[Off]
101-0005	Registration Clutch	Engages drive to registartion rolls.	On[Off]
101-0006	Duplex Feed Clutch	Engages drive to feed a paper into duplex path.	On[Off]
101-0007	Duplex Gate Clutch	Engages drive to convert paper direction into duplex path.	On[Off]
101-0008	T1 Feed Clutch	T1 Feed Clutch On/Off	On[Off]
101-0009	T2 Feed Clutch	T2 Feed Clutch On/Off	On[Off]
101-0010	T3 Feed Clutch	T3 Feed Clutch On/Off	On[Off]
101-0012	SMPS Fan Run Ready	Detects if Deve Fan runs at normal speed.	High[Low]
101-0013	Side Cover Interlock	Detect if the side cover is opened or closed.	Opened/ Closed
101-0014	Exit Cover Present Sensor	Detect when exit cover is in place.	Install [Not Install]
101-0015	Out-Bin Full Sensor	Detect when a paper is at Duplex Ready sensor.	High[low]

Code	Displayed Name	Meaning	State Displayed
102-0000	Tray1 Home Position	Detect when tray1 is closed.	Closed [Opened]
102-0001	T1 Paper Empty Sensor	Detect when paper is in Tray1.	High[low]
102-0002	T1 Size1 sensor	Detects whether auto size1 sensor of tray1 is high or low.	High[low]
102-0003	T1 Size2 sensor	Detects whether auto size2 sensor of tray1 is high or low.	High[low]
102-0004	T1 Size3 sensor	Detects whether auto size3 sensor of tray1 is high or low.	High[low]
102-0005	T1 Stack Height Sensor	Detects if paper in tray1 is elevated to the sensor.	High[low]
102-0006	T1 Paper Low Sensor	Detects when the stack height of tray1 is less than 25%.	High[low]
102-0007	Tray2 Home Position	Detect when tray2 is closed.	Closed [Opened]
102-0008	T2 Paper Empty Sensor	Detect when paper is in tray2.	High[low]
102-0009	T2 Size1 sensor	Detects whether auto size1 sensor of tray2 is high or low.	High[low]
102-0010	T2 Size2 sensor	Detects whether auto size2 sensor of tray2 is high or low.	High[low]
102-0011	T2 Size3 sensor	Detects whether auto size3 sensor of tray2 is high or low.	High[low]
102-0012	T2 Stack Height Sensor	Detects if paper in tray2 is elevated to the sensor.	High[low]
102-0013	T2 Paper Low Sensor	Detects when the stack height of tray2 is less than 25%.	High[low]
102-0014	Tray3 Home Position	Detect when tray3 is closed.	Closed [Opened]
102-0015	T3 Paper Empty Sensor	Detect when paper is in tray3.	High[low]
102-0016	T3 Size1 sensor	Detects whether auto size1 sensor of tray3 is high or low.	High[low]
102-0017	T3 Size2 sensor	Detects whether auto size2 sensor of tray3 is high or low.	High[low]
102-0018	T3 Size3 sensor	Detects whether auto size3 sensor of tray3 is high or low.	High[low]
102-0019	T3 Stack Height Sensor	Detects if paper in tray3 is elevated to the sensor.	High[low]
102-0020	T3 Paper Low Sensor	Detects when the stack height of tray3 is less than 25%.	High[low]
102-0028	Bypass Paper Empty Sensor	Detects when paper is in Bypass Tray(MP Tray).	High[low]
102-0029	Feed Sensor	Detect when a paper is at Feed sensor.	High[low]

Code	Displayed Name	Meaning	State Displayed
102-0030	T2 Feed Sensor (or Door Open)	Detect when a paper is at T2 Feed sensor. (optional)	High[low]
102-0031	T3 Feed Sensor (or Door Open)	Detect when a paper is at T3 Feed sensor. (optional)	High[low]
102-0033	Regi. Sensor	Detect when a paper is at Regi. sensor.	High[low]
102-0034	Exit Sensor	Detect when a paper is at Exit. sensor.	High[low]
102-0035	Duplex Jam1 Sensor	Detect when a paper is at Duplex Jam1 sensor.	High[low]
102-0036	Duplex Jam2 Sensor	Detect when a paper is at Duplex Jam2 sensor.	High[low]
105-0000	Yellow MHV Bias	Yellow MHV bias voltage on at normal drive level	On[Off]
105-0001	Magenta MHV Bias	Magenta MHV bias voltage on at normal drive level	On[Off]
105-0002	Cyan MHV Bias	Cyan MHV bias voltage on at normal drive level	On[Off]
105-0003	Black MHV Bias	Black MHV bias voltage on at normal drive level	On[Off]
105-0004	Yellow MHV Bias Read	Yellow Detect what the MHV value is on the MHV Roller	On[Off]
105-0005	Magenta MHV Bias Read	Magenta Detect what the MHV value is on the MHV Roller	On[Off]
105-0006	Cyan MHV Bias Read	Cyan Detect what the MHV value is on the MHV Roller	On[Off]
105-0007	Black MHV Bias Read	Black Detect what the MHV value is on the MHV Roller	On[Off]
106-0000	Yellow Dev Bias	Yellow Dev bias voltage on at normal drive level	On[Off]
106-0001	Magenta Dev Bias	Magenta Dev bias voltage on at normal drive level	On[Off]
106-0002	Cyan Dev Bias	Cyan Dev bias voltage on at normal drive level	On[Off]
106-0003	Black Dev Bias	Black Dev bias voltage on at normal drive level	On[Off]
107-0000	Yellow THV Bias Read	Detect what the THV value is on the THV Roller	Numeric 3 digits
107-0001	Magenta THV Bias Read	Detect what the THV value is on the THV Roller	Numeric 3 digits
107-0002	Cyan THV Bias Read	Detect what the THV value is on the THV Roller	Numeric 3 digits
107-0003	Black THV Bias Read	Detect what the THV value is on the THV Roller	Numeric 3 digits
107-0004	iTHV(+) Bias	iTHV plus bias voltage on at normal drive level	On[Off]
107-0005	iTHV Bias Read	Detect what the THV value is on the iTHV Roller	
107-0006	iTHV(-) Bias	iTHV minus bias voltage on at normal drive level	On[Off]
109-0000	Fuser Temperature A	Detects what the temperature A is on fuser.	Numeric 3 digits
109-0001	Fuser Temperature B	Detects what the temperature B is on fuser.	Numeric 3 digits

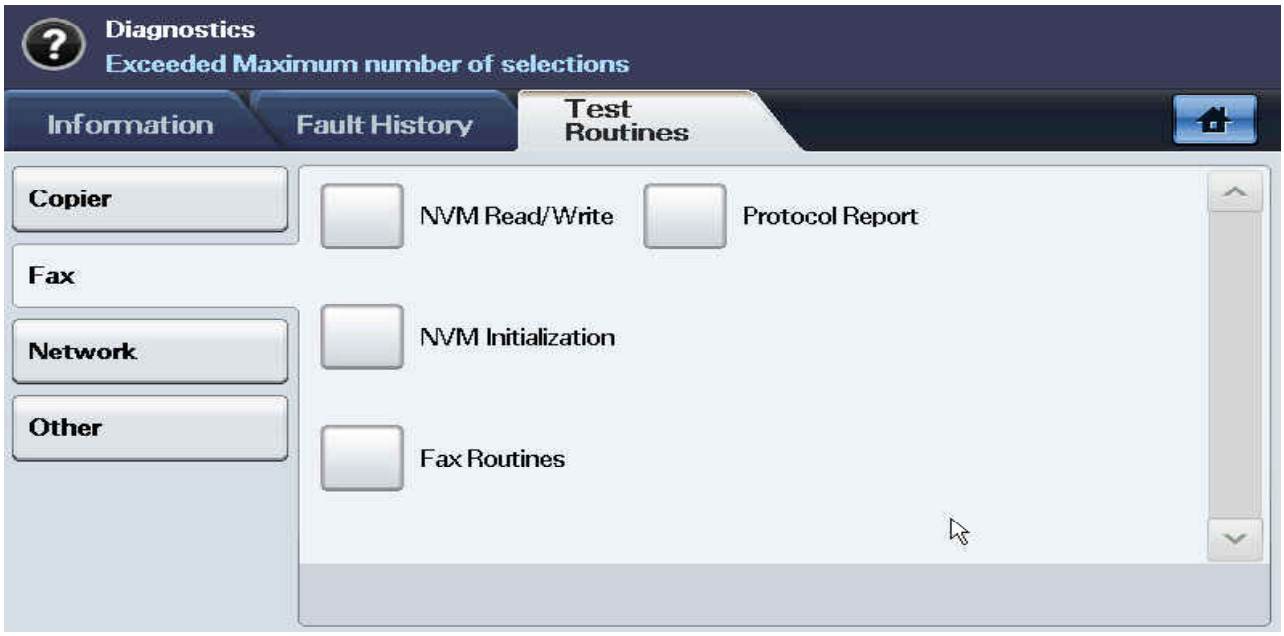
Code	Displayed Name	Meaning	State Displayed
109-0002	Fuser Fan Run Ready	Detects if Fuser Fan Motor runs at normal speed.	High[Low]
109-0003	Fuser Motor Forward	Fuser Motor Forward On/Off	On[Off]
109-0004	Fuser Fan Run	Fuser Fan Motor On/Off	On[Off]
109-0005	Fuser Bias	Fuser bias voltage on at normal drive level	On[Off]
109-0006	Heater Over Heat Sensor	Detect if the Heater is in Overheat Status.	High[Low]
109-0007	Heater Low Heat Sensor	Detect if the Heater is in Lowheat Status.	High[Low]
109-0008	Heater Open Heat Sensor	Detect if the Heater is in Openheat Status.	High[Low]
110-0000	LSU Motor1 Run Ready	Detects if LSU motor1 runs at normal speed.	High[Low]
110-0001	LSU Motor2 Run Ready	Detects if LSU motor2 runs at normal speed.	High[Low]
110-0002	LSU Fan1 Run Ready	Detects if LSU Fan Motor runs at normal speed.	High[Low]
110-0003	LSU Fan2 Run Ready	Detects if LSU Sub Fan Motor runs at normal speed.	High[Low]
110-0004	LSU Clean Motor	Detect if the LSU Clean Motor On/Off	High[Low]
110-0005	LSU Clean Sensor	Detect if the LSU Clean Motor is On or Off	High[Low]
110-0006	LSU Motor1 Run	LSU Motor1 On/Off	On[Off]
110-0007	LSU Motor2 Run	LSU Motor2 On/Off	On[Off]
110-0008	LSU LD Power1	LSU LD1 Power On/Off (yellow)	On[Off]
110-0009	LSU LD Power2	LSU LD2 Power On/Off (magenta)	On[Off]
110-0010	LSU LD Power3	LSU LD3 Power On/Off (cyan)	On[Off]
110-0011	LSU LD Power4	LSU LD4 Power On/Off (black)	On[Off]
110-0012	LSU Fan1 Run	Start/Stop LSU Fan Run	On[Off]
110-0013	LSU Fan2 Run	Start/Stop LSU Sub Fan Run	On[Off]
111-0000	Toner Dispense Motor Yellow	Toner Dispense(Supply) Motor On/Off	On[Off]
111-0001	Toner Dispense Motor Magenta	Toner Dispense(Supply) Motor On/Off	On[Off]
111-0002	Toner Dispense Motor Cyan	Toner Dispense(Supply) Motor On/Off	On[Off]
111-0003	Toner Dispense Motor Black	Toner Dispense(Supply) Motor On/Off	On[Off]
111-0004	Toner Sensor Yellow	TC sensor in developer tank.	x.xx voltage
111-0005	Toner Sensor Magenta	TC sensor in developer tank.	x.xx voltage
111-0006	Toner Sensor Cyan	TC sensor in developer tank.	x.xx voltage
111-0007	Toner Sensor Black	TC sensor in developer tank.	x.xx voltage
112-0000	ACR Execute Now	Start Auto Color Registration	
113-0000	Finisher Present Sensor	Detect if the Finisher is in place.	Install [Not Install]
113-0001	Entrance Motor	Entrance Motor run as IOT Speed <about 5 sec>	On[Off]
113-0002	Exit Motor	Exit Motor run as IOT Speed <about 5 sec>	On[Off]
113-0003	Paddle Motor	Paddling	On

Code	Displayed Name	Meaning	State Displayed
113-0004	Front Jog Home	Front Jogger move Home	On
113-0005	Front Jog Stand	Front Jogger move to Stand	On
113-0006	Rear Jog Home	Rear Jogger move Home	On
113-0007	Rear Jog Stand	Rear Jogger move to Stand	On
113-0008	Support Finger Home	Supporter move Home	On
113-0009	Support Finger Stand	Supporter move to Stand	On
113-0010	Ejector Motor	Ejecting	On
113-0011	Stacker Down	Stacker down to bottom	On
113-0012	Stacker Up	Stacker up to Stacking position	On
113-0013	Stapler	Staple when no cartridge	On
113-0014	Entrance Sensor	Detect paper at paper feeding area.	High[Low]
113-0015	Exit Sensor	Detect paper at paper exit area.	High[Low]
113-0016	Paddle Home Sensor	Detect Paddle Home position	High[Low]
113-0017	Front Jog Home Sensor	Detect Front Jog Home position	High[Low]
113-0018	Rear Jog Home Sensor	Detect Rear Jog Home position	High[Low]
113-0019	Support Finger Home Sensor	Detect Support-Finger Home position	High[Low]
113-0020	Ejector Home Sensor	Detect Ejector Home position	High[Low]
113-0021	Ejector Encoder Sensor	Detect Ejector Encoder sensor	High[Low]
113-0022	Stacker Top Sensor	Detect Stacker Top position	High[Low]
113-0023	Stacker Bottom Switch	Detect Staple Bottom position	High[Low]
113-0024	Staple Home Sensor	Detect Staple Home position	High[Low]
113-0025	Staple Ready Sensor	Detect Staple Ready to clinching.	High[Low]
113-0026	Low Staple Sensor	Detect Staple Low	High[Low]
113-0027	Paper Detector Sensor	Detect paper in stapler area	High[Low]
113-0028	Finisher Door Switch	Detect Finsher Door Open or Close	High[Low]
113-0029	IOT Set Sensor	Detect Finisher is connected with IOT.	High[Low]
113-0030	Duplex Paper Sensor	Deetct Duplex Paper feeding from IOT.	High[Low]
117-0000	CTD Execute Now	Start CTD	
117-0001	Print CTD Check Page	Print CTD Check Page	

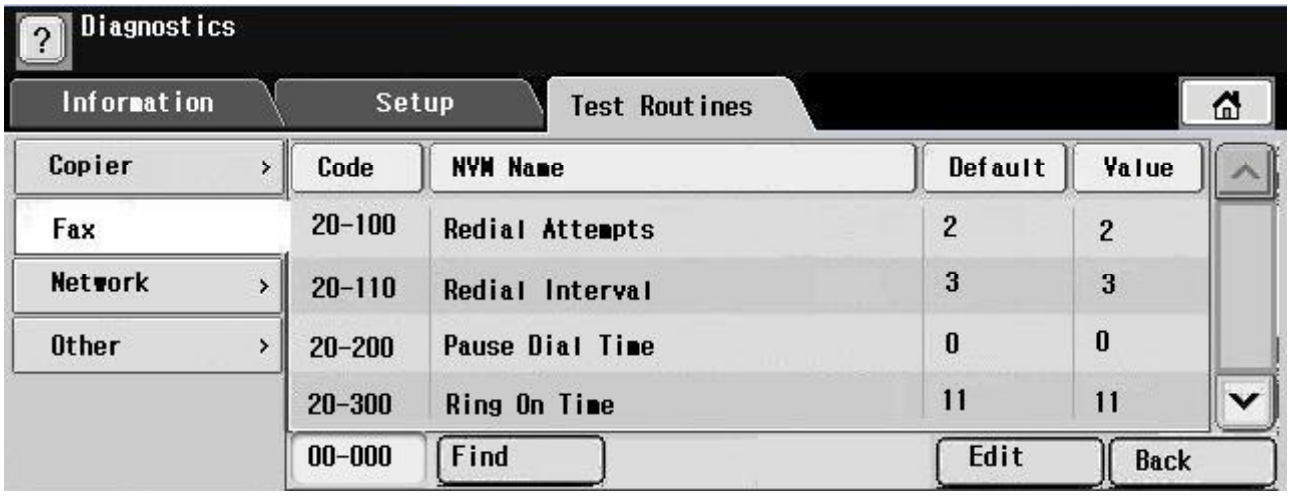
4.1.8.7(b) Fax

NVM Read/Write

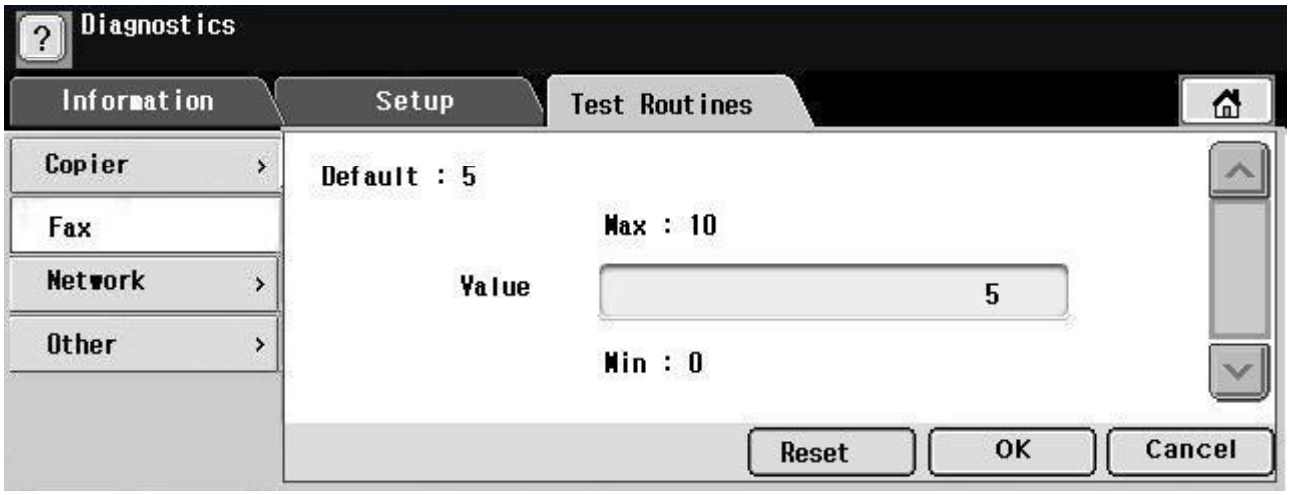
• Diagnostics>Test Routines>Fax>NVM Read/Write



For the behavior, refer to Copier-NVM Read/Write.



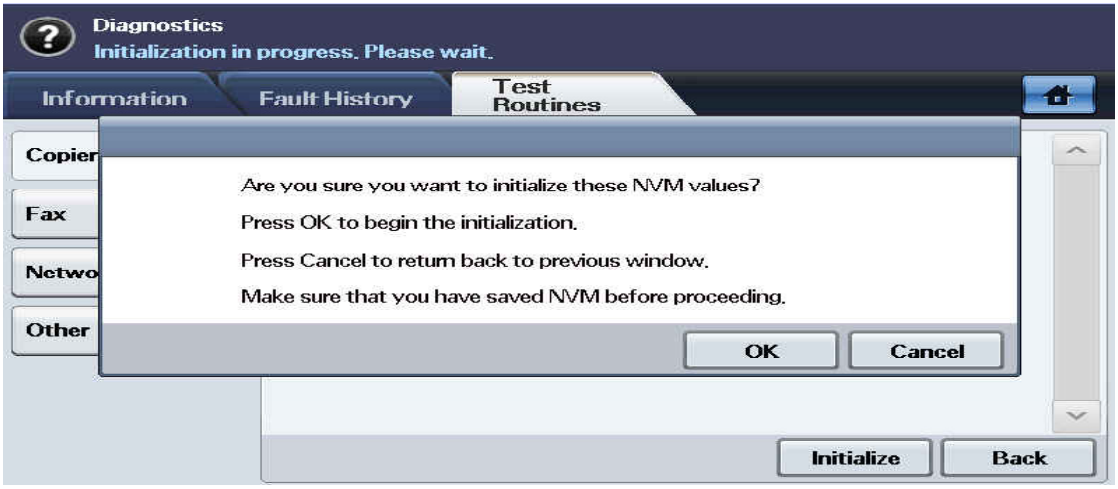
For the behavior, refer to Copier-NVM Read/Write-Edit.



NVM Initialization

• Diagnostics>Test Routines>Fax>NVM Initialization
• By default, none of items is selected and Initialize button shall be disabled. There shall be Back button.

• Diagnostics>Test Routines>Fax>NVM Initialization>Initialize



If you want to initialize the NVM values, press OK button.
When press OK button, SR shall show the initialization progress status and result.
When the result is get, pop up window shall be disappeared.

Protocol Report

• Diagnostics>Test Routines>Fax>Protocol Report
• When selecting Protocol Report, the sub-item will be displayed. By pressing the print, you can print the protocol report.

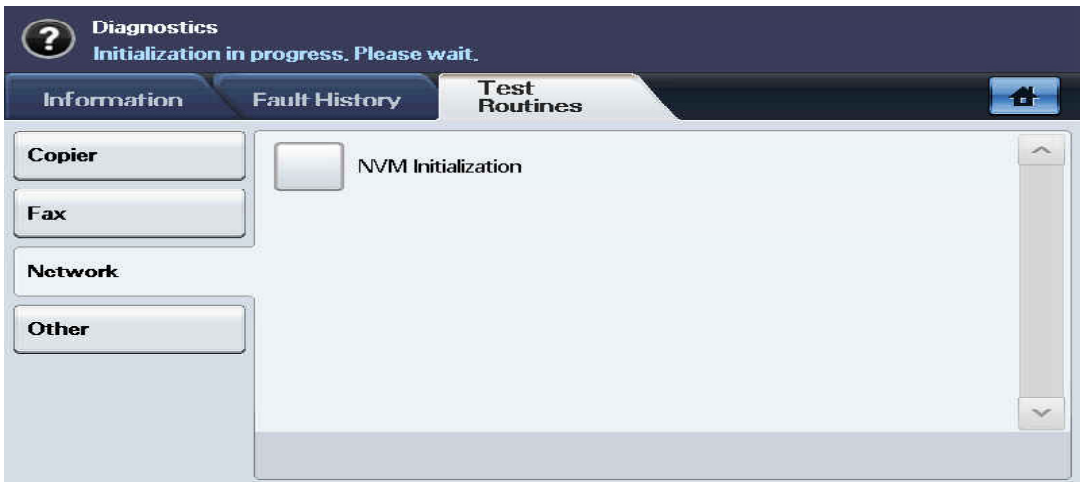
Fax Routines

• Diagnostics>Test Routines>Fax> Fax Routines
• For the behavior, refer to Engine/DADF Test Routines

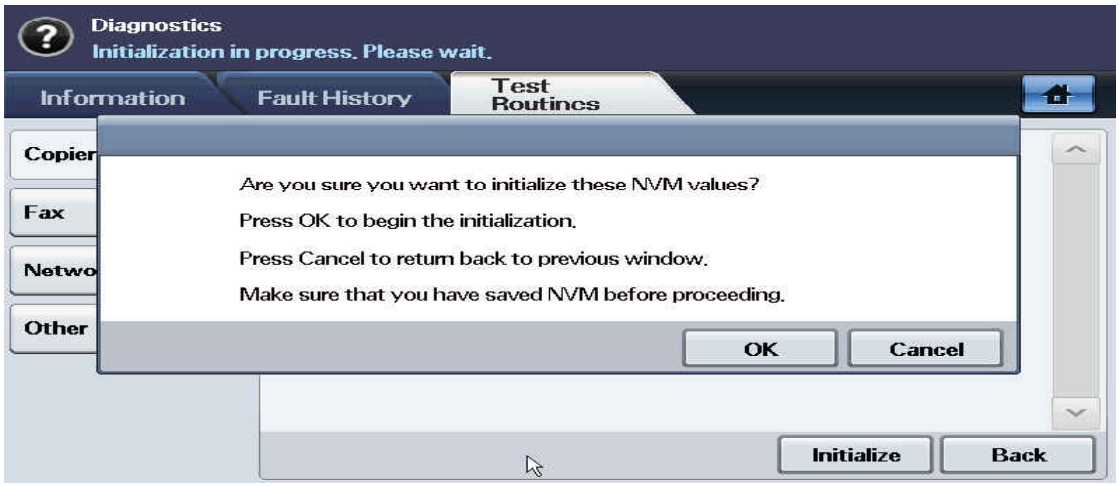
4.1.8.7(c) Network

NVM Initialization

• Diagnostics>Test Routines>Network>NVM Initialization



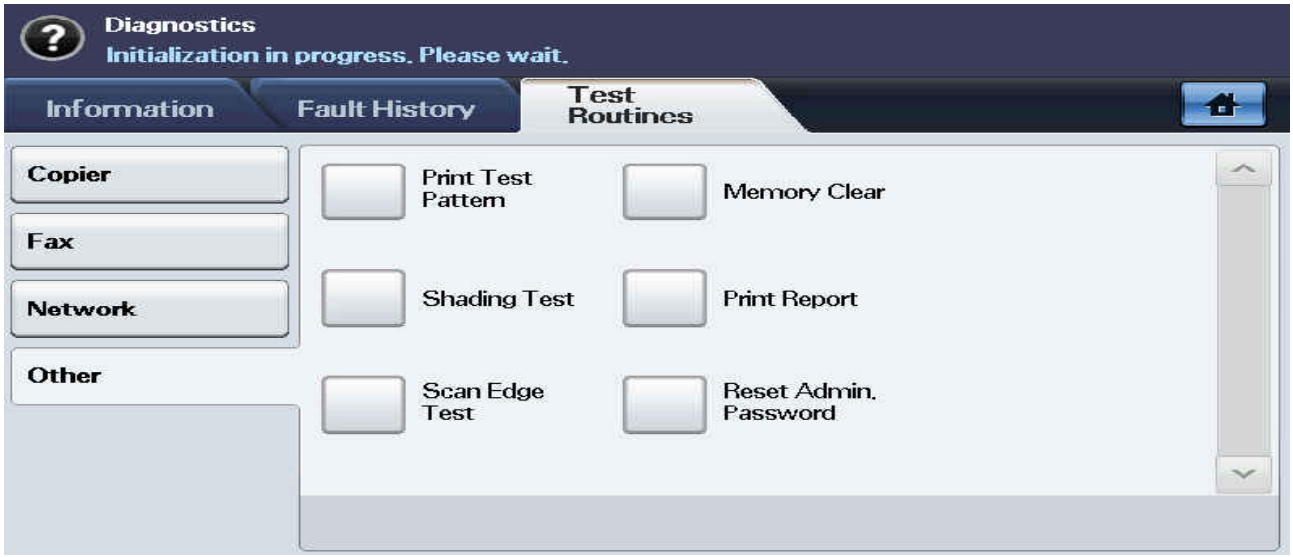
• Diagnostics>Test Routines>Network>NVM Initialization>Initialize



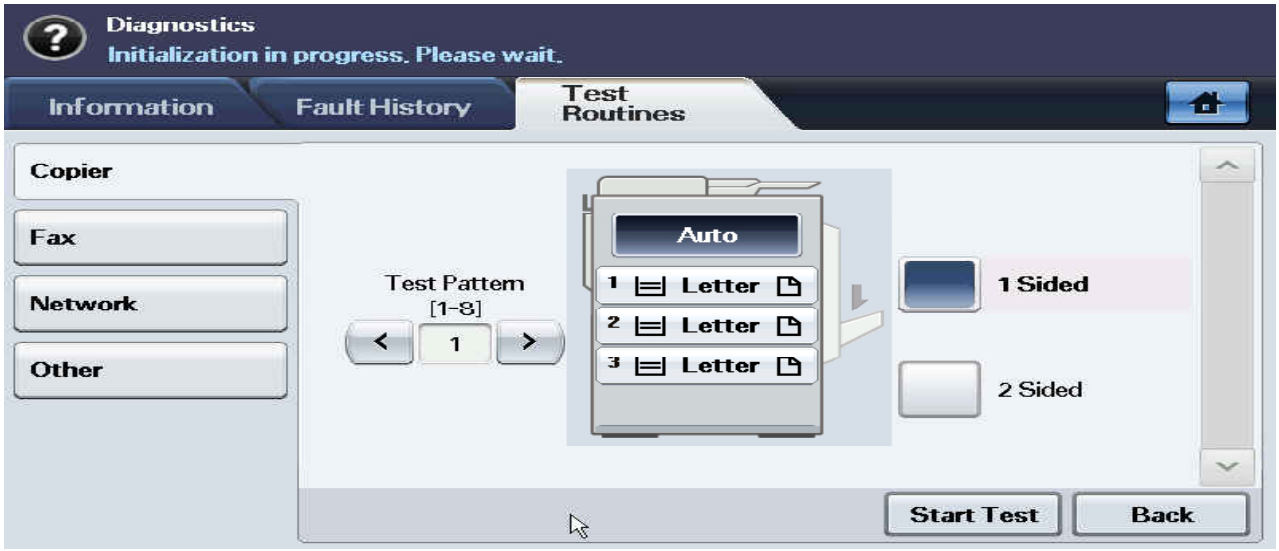
If you want to initialize the NVM values, press OK button.
When press OK button, SR shall show the initialization progress status and result.
When the result is get, pop up window shall be disappeared.

4.1.8.7(d) Other

• Diagnostics>Test Routines>Other

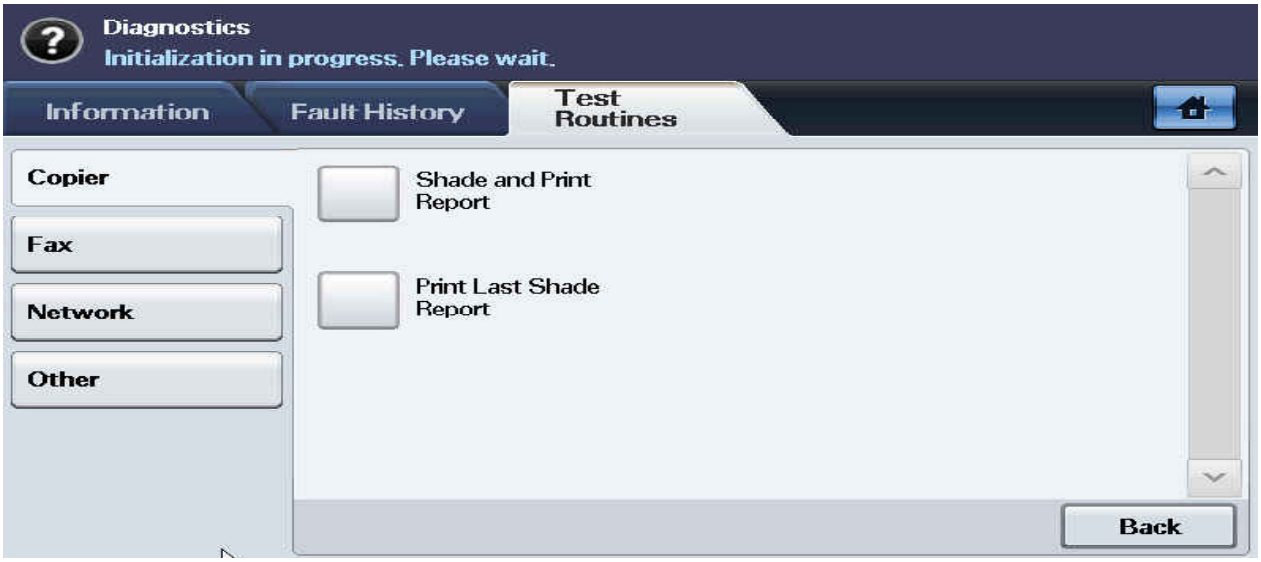


• Diagnostics>Test Routines>Other>Print Test Pattern



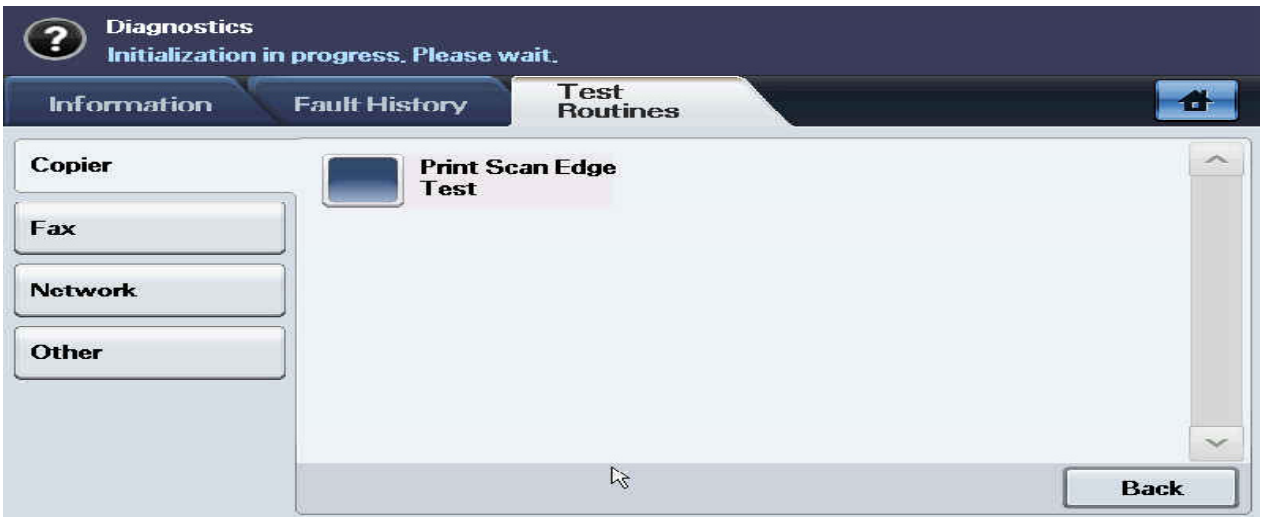
You can print the test pattern by pressing the start test button.
By default, Test Pattern number shall be 1.
You can select paper source by selecting tray of the image.
You can select simplex/duplex printing option by selecting 1 sided /2 sided button.

• Diagnostics>Test Routines>Other>Shading Test



The function is used to set the optimum scan quality determined by the specific characteristics of the CCD (Charge Coupled Device). If copy image quality is poor perform this function to check the condition of the CCD unit.

• Diagnostics>Test Routines>Other>Scan Edge Test

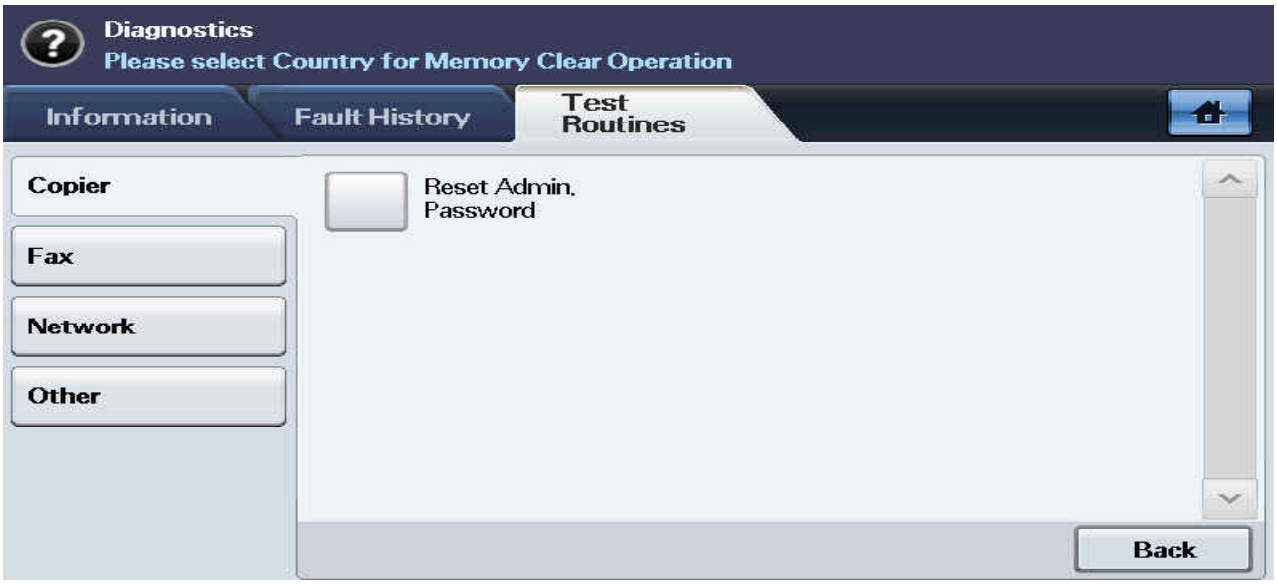


• Diagnostics>Test Routines>Other>Memory Clear

The function resets the system to factory default settings.
This function is used to reset the system to the initial value when the product is functioning abnormally. All the values are returned to the default values, and all the information which was set by the user will be erased.
When select memory clear, user can select the country.

• Diagnostics>Test Routines>Other>Print Report

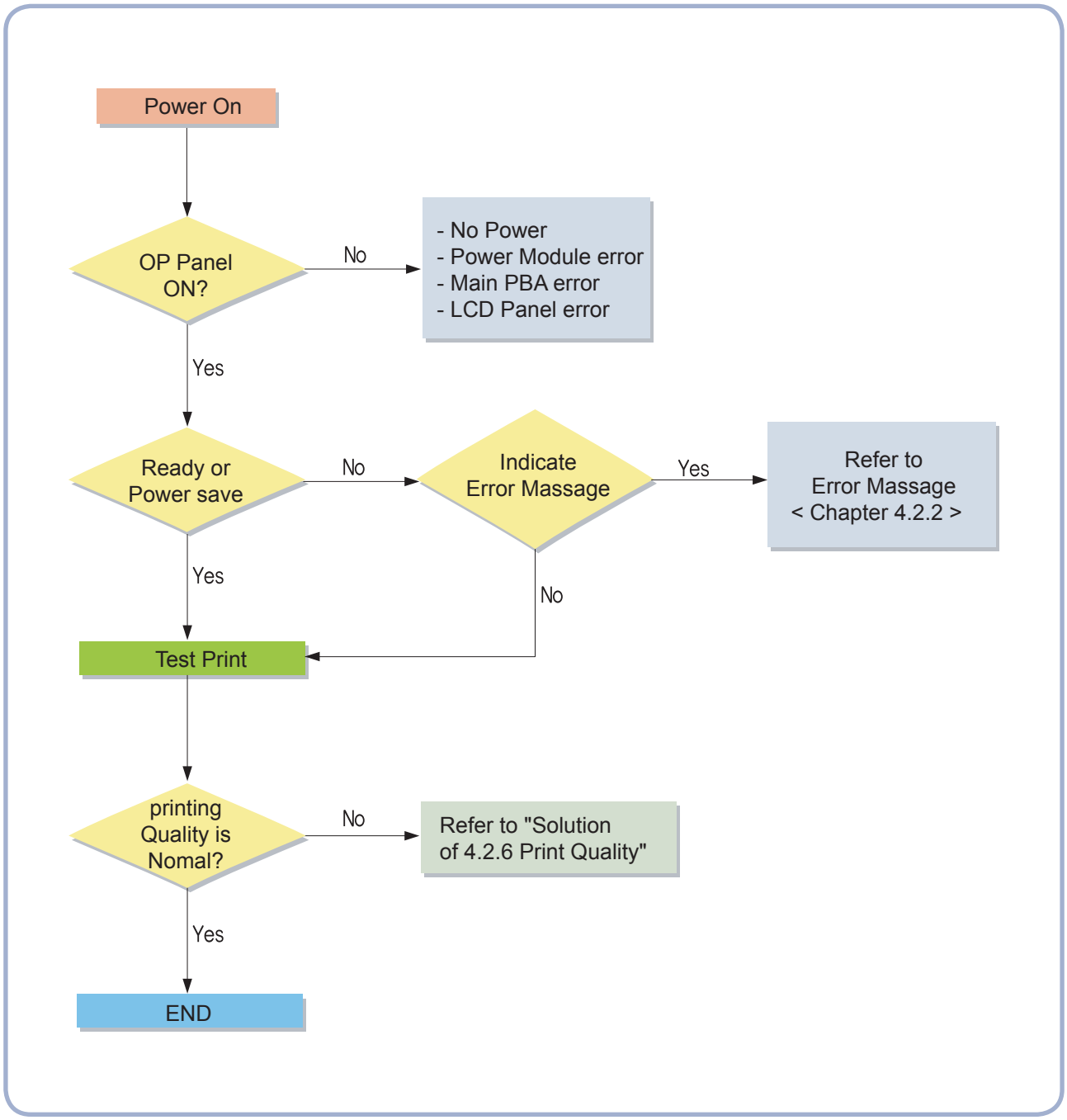
• Diagnostics>Test Routines>Other>Reset Admin. password



4.2 Troubleshooting

4.2.1 Procedure of Checking the Symptoms

Before attempting to repair the printer first obtain a detailed description of the problem from the customer.



4.2.2 Display Meassage Troubleshooting

Messages appear on the Smart Panel program window or on the control panel display to indicate machine status or errors. Refer to the tables
below to understand the messages meaning to correct the problem, if necessary.

Message	Meaning	Suggested Solutions
{Color} toner is low. Order new toner cartridge	Toner Cartridge is almost empty.	Install a new toner cartridge.
{Color} imaging unit is not compatible. Check user's guide	The imaging unit you have installed is not for your machine.	Install a Samsung gununie toner cartridge, designed for your machine.
{Color} imaging unit is not installed. Install it	The imaging unit is not tinstalled, or the CRUM in the cartridge is not connected.	Check the connection between imaging unit CRUM connnector and SET.
{Color} imaging unit is worn. Replace with new one	The imaging unit is at the end of its life.	Install a new Imaging unit.
{Color} toner cartridge is not compatible. Check user's guide	The toner cartridge you have installed is not for your machine.	Install a new toner cartridge.
{Color} toner cartridge is not installed. Install it	The toner cartridge is not installed or the CRUM in the cartridege is not properly connected.	Check the connection between toner cartridge CRUM connnector and SET.
{Color} toner cartridge is worn. Replace with new one	The color toner cartridge has run out. The machine stops printing.	Install a new toner cartridge.
{Color} toner cartridge is worn. Replace with new one	The toner cartridge has run out. The machine stops printing.	Replace a new toner cartridge.
{Color} toner is empty. Replace toner cartridge	The lifespan of the color toner cartridge which the arrow indicates is reached.	Install a new toner cartridge.
{Side/Main} Door is open. Close it	The side door or main door is open.	1. Open and close the door. If the message is not disappeared, check the below steps. 2. Check that the door switch is pushed. 3. Check that the Ui message is chaged by door switch action. 4. Check the door switch signal on EDC mode.
Communication problem occurred with tray2 or Communication problem occurred with tray2(HCF)	Tray2 or HCF is not installed.	Check the connection between Tray2 and HCF. If there is any problem, replace the tray2 and HCF board. If the problem persists, replace the main board.

Message	Meaning	Suggested Solutions
Communication problem occurred with network board	Communication error with Network board	Check the Network board connection. If there is any problem, replace the Network board. If the problem persists, replace the main board.
Communication problem occurred with scanner unit	Communication error with scanner unit	Check the Scanner connection. If there is any problem, replace the Scanner board. If the problem persists, replace the main board.
DC motor does not operate: #03-010. Please turn off then on	DC motor for transfer belt does not operate.	Replace the Engage motor or Engage check sensor for transfer belt.
DC motor does not operate: #03-011. Please turn off then on	DC motor for transfer roller does not operate.	Replace the Engage motor or Engage check sensor for transfer roller.
Did not supply enough {Color} toner. Remove seal tape & reinstall	Did not supply enough {black} toner.	Remove the seal tape of the imaging unit.
Did not supply enough {Color} toner. Please open/close door	Not supplied toner to the imaging unit.	1. Check the Toner supply Motor is driving 2. Check the toner supply shutter is working out properly. 3. Check the toner supply entrance is closed. 4. Check the Toner supply pipe is closed. 5. Check the T/C sensor 6. Check TC sensor ADC of the Engine B/D
Exit door of scanner is open	DADA exit door is open	1. Close the DADF exit door.
Fan does not operate: #03-002~5. Please turn off then on	Fan does not operate.	Find out the defective FAN. Replace it.
Fax unit error: #10-002. Please turn off then on	1. Fax card is not installed. 2. Fax card is not installed properly. 3. Fax card is out of order. 4. In case that you didn't modem install after installing fax card	1. Replace the Fax unit. 2. If the problem persists after replacing the Fax unit, replace the Fax unit.
Finisher door is open. Close it	Finisher door is open.	Close the finisher door.
Finisher error: #07-007~014. Please turn off then on	There is a problem in the finisher unit.	Turn the machine off and reinstall the finisher again. Check that the finisher cable is connected properly.

Message	Meaning	Suggested Solutions
Fuser error: #02-001. Please turn off then on	1. At warm up, the temperature keep up the lower temperature for regular time. 2. In case that the temperature has not reached warm up temperature after warm-up time. 3. At ready, Less than target temperature and for more than 10 sec. 4. At printing, Less than printing Ref. temp and for more than 10 sec.	1. Check the Thermostat. If it is defective, replace it. 2. Check the Lamp. If it is defective, replace it. 3. Check the fuser connector. Reconnect it. 4. If the Heat On signal is not occurred from Power supply, replace it.
Fuser error: #02-002. Please turn off then on	1. At warm up, the temperature keep up the lower temperature for regular time. 2. At warm up, after temperature checking time, more than regular temperature and for more 10 sec. 3. At standby or sleep, more than Top temp and for a few minutes. 4. At power save mode, the temperature keep up the constant for regular time.	Replace the Fuser/Fuser control board/Engine controller
Hard disk drive error: #10-003. Please turn Off then On	1. Hard disk is not installed 2. Hard disk is out of order.	1. Turn off the power. And reconnect the connector of the Hard disk. 2. If the error message is still displayed, replace the Hard disk. 3. If the problem persists, replace the main board.
Imaging unit error: #06-013~16. Please turn off then on	Imaging unit error	1. Check the T/C sensor Harness connection. 2. Check the output wave form of the T/C sensor. 3. Check the Engine B/D TC Sensor ADC
LSU error: #04-000. Please turn off then on	LSU motor does not operate.	Check the LSU motor noise. If there is any dirving noise, check the motor signal.
LSU error: #04-001. Please turn off then on	After LD on, the Laser beam detect signal is not occurred or irregular.	1. Check the Beam Detecht signal. If there is a BD signal, replace the Main board. If or not, check the LD contol signal. 2. Check the LD Power is normal. 3. If it is normal, check the light receving part.
LSU error: #04-002. Please turn off then on	LSU motor does not operate or the drive signal is abnormal.	Check the LSU motor noise. If there is any dirving noise, check the motor ready signal.
LSU error: #04-003. Please turn off then on	Yellow LSU motor does not operate.	Check the LSU motor noise. If there is any dirving noise, check the motor signal.

Message	Meaning	Suggested Solutions
LSU error: #04-004. Please turn off then on	After Yellow LD on, the Laser beam detect signal is not occurred or irregular.	1. Check the Beam Detecht signal. If there is a BD signal, replace the Main board. If or not, check the LD contol signal. 2. Check the LD Power is normal. 3. If it is normal, check the light receving part.
LSU error: #04-006. Please turn off then on	Magenta LSU motor does not operate.	Check the LSU motor noise. If there is any dirving noise, check the motor signal.
LSU error: #04-007. Please turn off then on	After Magenta LD on, the Laser beam detect signal is not occurred or irregular.	1. Check the Beam Detecht signal. If there is a BD signal, replace the Main board. If or not, check the LD contol signal. 2. Check the LD Power is normal. 3. If it is normal, check the light receving part.
LSU error: #04-009. Please turn off then on	Cyan LSU motor does not operate.	Check the LSU motor noise. If there is any dirving noise, check the motor signal.
LSU error: #04-010. Please turn off then on	After Cyan LD on, the Laser beam detect signal is not occurred or irregular.	1. Check the Beam Detecht signal. If there is a BD signal, replace the Main board. If or not, check the LD contol signal. 2. Check the LD Power is normal. 3. If it is normal, check the light receving part.
Memory failure: #10-001. Please turn off then on	At system booting, the memory is not read.	Replace the memory.
Motor does not operate: #03-000. Please turn off then on	After ITB BLDC motor is operated, the ready signal is not occurred within 1 sec.	Check the ITB waste toner is eliminated properly. If the ITB waste toner overflows, the motor error will be occurred because of increasing the torque. Replace the developing unit.
Motor does not operate: #03-006. Please turn off then on	After Black OPC BLDC motor is operated, the ready signal is not occurred within 1 sec.	Check the ITB waste toner is eliminated properly. If the ITB waste toner overflows, the motor error will be occurred because of increasing the torque. Replace the developing unit.
Motor does not operate: #03-007. Please turn off then on	After Color OPC BLDC motor is operated, the ready signal is not occurred within 1 sec.	Check the ITB waste toner is eliminated properly. If the ITB waste toner overflows, the motor error will be occurred because of increasing the torque. Replace the developing unit.
Motor does not operate: #03-008. Please turn off then on	After Color Dev BLDC motor is operated, the ready signal is not occurred within 1 sec.	Take out and Shake the developing unit horizontally. And reinstall it. If the problem persists, Replace the developing unit.

Message	Meaning	Suggested Solutions
Original paper does not feed in scanner	The lead edge of the document failed to actuate the scan sensor within the correct time after actuating the registration sensor.	1. Open the DADF door. And remove the jammed paper. Close the DADF door. 2. Open the platen door and remove the jammed paper. 3. Open the reverse stack door and remove the jammed paper. 4. Check the paper exit.
Original paper is too long for scanner. Check size	Oversized document or double-feeding of originals.	1. Check the paper exit and remove the jammed paper. 2. Open the Platen door and remove the jammed paper. 3. Open the ReverseStack door and remove the jammed paper. 4. Open the DADF door and remove the jammed paper.
Original paper jam in front of scanner duplex path	Paper has jammed during duplex printing in the DADF.	1. Open the DADF door. And remove the jammed paper. Close the DADF door. 2. Open the platen door and remove the jammed paper. 3. Open the reverse stack door and remove the jammed paper. 4. Check the paper exit.
Original paper jam in front of scanner	The originals are jammed in DADF	1. Remove the all document on DADF. 2. Remove the jammed paper in DADF.
Original paper jam inside of scanner duplex path	1. The lead edge of the document failed to actuate the reverse stack sensor within the correct time after actuating the gate sensor. 2. The edge of the document failed to actuate the reverse stack sensor.	1. Open the ReverseStack door. And remove the jammed paper. 2. Open the platen door and remove the jammed paper. 3. Open the DADF door and remove the jammed paper. 4. Check the paper exit.
Original paper jam inside of scanner	The lead edge of the document failed to actuate the gate sensor within the correct time after actuating the scan sensor. When the machine is on, jammed paper is detected in the DADF.	1. Open the DADF door. And remove the jammed paper. Close the DADF door. 2. Open the platen door and remove the jammed paper. 3. Open the reverse stack door and remove the jammed paper. 4. Check the paper exit.

Message	Meaning	Suggested Solutions
Original paper jam inside of scanner	After power on and initializing, the original is sensed by DADF inner sensor(Regi, Scan, Gate, Duplex, Reverse Stack)	1. Open the DADF door. And remove the jammed paper. Close the DADF door. 2. Open the platen door and remove the jammed paper. 3. Open the reverse stack dooor and remove the jammed paper. 4. Check the paper exit.
Original paper jam while reversing paper in scanner	The lead edge of the document failed to actuate the duplex sensor within the correct time when the document was fed the wrong way.	1. Open the DADF door. And remove the jammed paper. Close the DADF door. 2. Open the platen door and remove the jammed paper. 3. Open the reverse stack door and remove the jammed paper. 4. Check the paper exit.
Paper jam at exit of finisher	Paper jammed in the stacker.	Open the stacker door and remove jammed paper by lowering guide 1a or 1b.
Paper Jam at the bottom of duplex path	Paper has jammed during duplex printing.	If there is no paper but the error message is displayed, check the Duplex sensor. (Component Test)
Paper Jam at the top of duplex path	Paper has jammed during duplex printing.	If there is no paper but the error message is displayed, check the Duplex sensor. (Component Test)
Paper Jam in exit area	Paper has jammed in the fuser area.	1.If there is not jammed paper but the error is occured, Check the Exit Sensor (Component Test -> Sensor Read -> EX value)
Paper jam in front of finisher	Paper jammed in the stacker.	Open the stacker door and remove jammed paper by lowering guide 1a or 1b.
Paper Jam in MP tray	Paper misfed from multi-purpose tray.	1. If pick up roller does not rotate , check the pick up clutch. 2. If Pickup roller is rotating but the paper is not feeding, replace the pick up rubber. 3. Check the feed sensor. If it is defective, replace it.
Paper Jam in tray1	Paper has jammed in the feeding area of the tray.	1. Open the side door and remove the jammed paper. 2. If pick up roller does not rotate , check the pick up clutch. 3. If Pickup roller is rotating but the paper is not feeding, replace the pick up rubber. 4. Check the feed sensor. If it is defective, replace it.

Message	Meaning	Suggested Solutions
Paper Jam in tray2 or Paper Jam in tray2(HCF).	Paper has jammed in the feeding area of the tray.	1. Open the tray2 or HCF door and remove the jammed paper. 2. If pick up roller does not rotate , check the pick up clutch. 3. If Pickup roller is rotating but the paper is not feeding, replace the pick up rubber. 4. Check the feed sensor. If it is defective, replace it.
Paper Jam in tray3	Paper has jammed in the feeding area of the tray.	1. If there is no paper but the error message is displayed, check the Feed sensor or hardware. 2. If Pickup roller is rotating and the paper is feeding, check the pick up clutch.
Paper Jam in tray3(HCF)	Paper has jammed in the feeding area of the tray.	1. Open the tray3 door and remove the jammed paper. 2. If pick up roller does not rotate, check the pick up clutch. 3. If Pickup roller is rotating but the paper is not feeding, replace the pick up rubber. 4. Check the feed sensor. If it is defective, replace it.
Paper jam inside finisher	Paper jammed in the stacker.	Open the stacker door and remove jammed paper by lowering guide 1a or 1b.
Paper jam inside finisher's duplexer	Paper jammed in the stacker.	Open the stacker door and remove jammed paper by lowering guide 1a or 1b.
Paper Jam inside of duplex path	Paper has jammed during duplex printing.	If there is no paper but the error message is displayed, check the Duplex sensor. (Component Test)
Paper Jam inside of machine	Paper has jammed in the registration area	1. Open the Side door and remove the jammed paper. 2. If there is not jammed paper but the error is occured, Check the Registration Sensor (Component Test -> Sensor Read -> RG value) 3. If the paper stopped after actuating the Exit sensor, Check the Exit sensor (Component Test -> Sensor Read -> EX value)
Scanner locking switch is locked or another problem occurred	The CCD lock has been locked. the CCD does not detect its home location or move.	Unlock the CCD lock.
Sensor failure: #10-012. Call for service	Sensor error.	Check the external temperature sensor and main board. If it is defective, replace it.

Message	Meaning	Suggested Solutions
Shake {Color} toner cartridge	The toner supply is low	Thoroughly roll the new cartridge five or six times to distribute the toner evenly inside the cartridge.
Staple cartridge is empty. Replace it	Stapler is run out.	Replace the staple cartridge.
Staple cartridge is not installed. Install it in finisher	Staple cartridge is not installed	Install the staple cartridge.
Supplying and mixing toner to {Color} imaging unit... Please wait	Supplying and mixing toner to {black} imaging unit	Wait until the message is disappeared.
System error: #02-000. Please turn off then on	1. At warm up, the temperature is less than reference temperature for 20 sec. 2. Abnormal ADC has occurred. 3. ZeroCross Signal detect error has occurred.	1. In case of meaning 1, replace the Fuser unit. 2. In case of meaning 3, replace the Engine contol board or Fuser control board or SMPS.
System error: #02-003. Please turn off then on	The communication error of the MEGA88 Micom	Replace the Engine controller
System error: #10-004. Please turn off then on	Communication error with UI	Check the UI connector. If there is any problem, replace the UI board. If the problem persists, replace the main board.
This IP address conflicts with an IP address already in use. Check it	The IP address is used in other place elsewhere.	Check the IP address or obtain a new IP address.
Toner cartridge: #06-006. Please turn off then on	Toner Cartridge Error	1. Reinstall the toner cartridge. 2. Reconnect the harness.
Toner cartridge: #06-007. Please turn off then on	Toner Cartridge Error	1. Reinstall the toner cartridge. 2. Reconnect the harness.
Too much paper in finisher stacker. Remove printed paper	The stacker is full of printouts.	Remove the printed paper.
Too much paper in output bin tray. Remove printed paper	The printed papers are full on the output tray.	1. Remove the paper on the output tray. 2. Check the Outbin Full Senosr (Component Test -> Sensor Read -> OB)
Top door of scanner is open	1. DADF door is open during DADF driving. 2. Platen Door is open during DADF driving.	1. Open the DADF door. And remove the jammed paper. Close the DADF door. 2. Open the platen door and remove the jammed paper. 3. Open the reverse stack dooor and remove the jammed paper. 4. Check the paper exit.

Message	Meaning	Suggested Solutions
Top door of scanner is open	DADF door is open	1. Close the DADF door.
Tray2 door is open. Close it Tray2(HCF) door is open. Close it	Tray2 or HCF door is open.	1. Open and close the door. If the message is not disappeared, check the below steps. 2. Check that the door switch is pushed. 3. Check that the Ui message is chaged by door switch action. 4. Check the door switch signal on EDC mode.
Tray3 door is open. Close it	Tray3 door is open.	1. Open and close the door. If the message is not disappeared, check the below steps. 2. Check that the door switch is pushed. 3. Check that the Ui message is chaged by door switch action. 4. Check the door switch signal on EDC mode.

4.2.3 System Diagnostic

Problem Description	Cause Description	Action to Resolve
Low Image Density for a Particular Color	1. Low Toner Concentration 2. High OPC Surface Potential 3. Poor T1 Transferring	[1. Low Toner Concentration] 1.1) Print out CTD check page [EDC #117-0001]. 1.2) If the output has low toner concentration, execute CTD calibration [EDC #117-0000], and print CTD check page again. 1.3) If the toner concentration is still low, go to [DE-003] Failure in CTD Calibration. [2. High OPC Surface Potential] 2.1) Check and confirm MHV Bias for the color [TM #105-0000~0016]. 2.2) If there is any wrong value, change the value [TM #105-0000~0016]. 2.3) Turn on the Charging Bias for the color [EDC #105-0000~0003] 2.4) Read the MHV value for the color [EDC #105-0004~0007] 2.5) If any mis-reading on the MHV value, replace HVPS-L PBA. [3. Poor T1 Transferring] 3.1) Check and confirm THV1 Bias for the color [TM #107-0000~0007] 3.2) If there is any wrong value, check and confirm the contact point between the rear side of ITB and frame. 3.3) Read the THV1 value for the color [EDC #107-0000~0003] 3.4) If any mis-reading on the MHV value, replace HVPS-L PBA.
Low Image Density for All Colors	1. Poor T2 Transfer 2. Wrong CTD Sensing	[1. Poor T2 Transfer] 1.1) Check and confirm THV2 Bias for the color [TM #107-0008~0009] 1.2) If there is any wrong value, check and confirm the contact point of T2 driving roller in side unit. 1.3) Read the THV2 value for the color [EDC #107-0004~0007] 1.4) If any mis-reading on the THV2 value, replace HVPS-L PBA.
Vertical Irregular Image Density for a Particular Color	1. Unbalanced Metering Blade Gap 2. Unbalanced Developer Distribution at Developing Gap	[1. Unbalanced Metering Blade Gap] 1.1) Replace the Imaging unit. [2. Unbalanced Developer Distribution at Developing Gap] 2.1) Replace the Imaging unit.

Problem Description	Cause Description	Action to Resolve
Vertical Irregular Image Density for All Colors	1. Unbalanced T2 Transfer	[1. Unbalanced T2 Transfer] 1.1) Check the THV value.[EDC #107-0005] If there is any wrong value, replace the HVPS 1.2) Check the T2 Engage/Disenage Motoer[EDC #100-0010]. If it is defective, replace the T2 Engage Motor. 1.3) Check the T2 Engage/Disenage sensor [#EDC #100-0011]. If it is defective, replace the sensor. 1.4) When checking T2 Engage/Disenage [#EDC #100-0010], check that the T2 Roller work or not. If not work, replace the T2 Unit. 1.5) Check the ITB Drive Roller Ground. If it is defective, replace the ITB.
Image Density Difference between Right and Left Sides for a Particular Color	1. Unbalanced T1 Transfer Roller Nip	[1. Unbalanced T1 Transfer Roller Nip] 1.1) Check that the Front Cover is locking properly. 1.2) Take out the ITB and check the T1 roller state. If it is defective, replace the ITB.
Image Density Difference between Right and Left Sides for All Colors	1. Unbalanced T2 Transfer Roller Nip	[1. Unbalanced T2 Transfer Roller Nip] 1.1) Check that the Side Cover is locking properly. 1.2) Check the T2 Engage/Disenage Motoer[EDC #100-0010]. If it is defective, replace the T2 Engage Motor. 1.3) Check the T2 Engage/Disenage sensor [#EDC #100-0011]. If it is defective, replace the sensor. 1.4) When checking T2 Engage/Disenage [#EDC #100-0010], check that the T2 Roller work or not. If not work, replace the T2 Unit. 1.5) Check the ITB Drive Roller Ground. If it is defective, replace the ITB.
Horizontal White Line(s)	1. Mis-Contact on T1 and/or Charging Bias 2. Electrostatic Noise	[1. Mis-Contact on T1 and/or Charging Bias] 1.1) Take out the ITB and check the T1 roller conditions. If it is defective, replace the ITB. 1.2) Check and confirm MHV Bias for the color [TM #105-0010~0016]. If there is any wrong value, change the value [TM #105-0010~0016]. 1.3) Turn on the Charging Bias for the color [EDC #105-0000~0003] 1.4) Read the MHV value for the color [EDC #105-0004~0007] 1.5) If any mis-reading on the MHV value, replace HVPS-L PBA. 1.6) Check the OPC grounding. If the grounding is defective, replace the Imaging unit. 1.7) Check the ITB grounding. If the grounding is defective, replace the ITB unit.

Problem Description	Cause Description	Action to Resolve
Horizontal White Line(s) (continue..)	1. Mis-Contact on T1 and/or Charging Bias 2. Electrostatic Noise (continue..)	[2. Electrostatic Noise] 2.1) Check and confirm Dev Bias for the color [TM #106-0000~003], If there is any wrong value, change the value. 2.2) Check the connection state between the Imaging unit and Bias harness. 2.3) Check the Dev Bias for the color [EDC #106-0000~003]. If the value has any noies, replace the HVPS
Horizontal Sharp Line(s) for a Particular Color	1. Mis-Contact on Charging Bias 2. Unstable T1 Transfer Bias	[1. Mis-Contact on Charging Bias] 1.1) Check and confirm MHV Bias for the color [TM #105-0010~0016]. If there is any wrong value, change the value [TM #105-0010~0016]. 1.2) Turn on the Charging Bias for the color [EDC #105-0000~0003] If any mis-reading on the MHV value, replace HVPS-L PBA. 1.3) Check the OPC grounding. If the grounding is defective, replace the Imaging unit. [2. Unstable T1 Transfer Bias] 1.1) Take out the ITB and check the T1 roller conditions. If it is defective, replace the ITB. 1.2) Check and confirm T1 Bias for the color[TM #107-0000~0007], If there is any wrong value, change the value. 1.3) Read the T1 Bias value[EDC #107-0000~003]. If any mis-reading on the MHV value, replace HVPS PBA. 1.4) Check the ITB grounding. If the grounding is defective, replace the ITB.
Horizontal Sharp Line(s) for Multiple Colors of 78mm gap	1. Unstable T2 Transfer Bias Contact	[1. Unstable T2 Transfer Bias Contact] 1.1) Check the connection harness of T2 Bias. 1.2) Check the confirm THV2 bias [TM #107-0008~0009]. If there is any wrong value, change the value. [TM #107-0008~0009] 1.3) Read the THV2 bias[EDC #107-0005]. If it is defective, replace the HVPS. 1.4) Check the ITB Drive Roller Ground. If it is defective, replace the ITB.
Horizontal Thick Band(s) for a Particular Color	1. Unstable Charging Bias 2. Unstable Transfer Bias	[1. Unstable Charging Bias] 1.1) Check and confirm the Charge Bias [TM #105-0010~0016]. If there is any wrong value, change the value. 1.2) Check and confirm the Charge Bias [EDC #105-0000~003]. If there is a noise, check the ITB grounding.

Problem Description	Cause Description	Action to Resolve
Horizontal Thick Band(s) for a Particular Color (continue..)	1. Unstable Charging Bias 2. Unstable Transfer Bias (continue..)	1.3) If the ITB grounding is OK, check the THV bias. [TM #107-0000~0009] - If there is any wrong value, change the value [TM #107-0000~0009], - If the THV value is defective [EDC #107-0000~0005], replace the HVPS. 1.4) Check the Transfer Bias Harness. 1.5) If it is OK, check the Charging Bias Harness. 1.6) If it is OK, replace the Imaging unit. 1.7) If the problem persists, replace the HVPS. [2. Unstable Transfer Bias] 2.1) Check and confirm the transfer bias [TM #107-0000~0009]. If there is any wrong value, change the value [TM #107-0000~0009]. 2.2) If the THV value is defective [EDC #107-0000~0005], replace the HVPS. 2.3) Check the transfer bias noise [EDC #107-0000~0005]. If there is a noise, check the ITB grounding. 2.4) If the grounding is OK, check the transfer bias connection. 2.5) If the transfer bias harness is connected properly, replace the ITB. 2.6) If the problem persists, replace the HVPS
Horizontal Dark Band on Black Image	1. High Transfer Voltage 2. Low Image Density	[1. High Transfer Voltage] 1.1) Check and confirm the THV bias[TM #107-0000~0009]. If there is any wrong value, change the value [TM #107-0000~0009]. 1.2) If the THV value is defective [EDC #107-0000~0005], check the T1 roller contact conditions. 1.3) Check the T1 Bias Harness. 1.4) Check the ITB grounding. If it is defective, replace the ITB. 1.5) If the problem persists, replace the HVPS [2. Low Image Density] 2.1) Check the T/C control value [TM #111-0006~0017]. If there is any wrong value, change the value. 2.2) Check that the density is increasing or not. [EDC #117-0000] 2.3) If the density is not increasing, check the CTD density [EDC #117-0001]. And increase the color density until proper level on Custom Color Setting. 2.4) If you can't increase the density on Custom Color, change the T/C control value to increae the density [TM #111-0006~0017].

Problem Description	Cause Description	Action to Resolve
Horizontal Dark Band (1.8~2.1mm) on All Images	1. Runout on Auger in Developing Unit	[1. Runout on Auger in Developing Unit] 1.1) The problem occurs because of increasing the drive load in Developing unit. 1.2) Check the OPC curve drive torque. If the drive torque is increased, check the waste toner overflow of the OPC unit. If it is overflowed, replace the developing unit.
Horizontal Periodic Micro Jitter (sub-1mm Pitch) for a Particular Color	1. Unbalanced Charging Bias	[1. Unbalanced Charging Bias] 1.1) It is occurs because of the unbalanced Charging Bias. Check the external temparature sensor and the humidity sensor. 1.3) Check the Charge Bias [TM #105-0010~0016]. If there is any wrong problem, change the value. 1.4) Check the Charge Bias [EDC #105-0000~003]. 1.5) If the charge bias is defective, replace the HVPS. 1.6) If the charge bias is OK, replace the Developing unit.
Horizontal Periodic Jitter (2~3mm Pitch) for YMC Color	1. High Torque loaded on Waste Auger in Developing Unit	[1. High Torque loaded on Waste Auger in Developing Unit] 1.1) The problem occurs because of increasing the drive load in Developing unit. 1.2) Check the OPC curve drive torque. If the drive torque is increased, check the waste toner overflow of the OPC unit. If it is overflowed, replace the developing unit. 1.3) Check the dirve torque in Deve Roller curve. If the drive torque of the Deve Roller is increased, shake the developing unit horizontally and re-install it. If the problem persists, replace the developing unit because of the gear part.
Vertical White Band	1. ontaminations on LSU Outer Window 2. Partially No Developer on Developing Roller 3. Vertical Damage on ITB	[1. Contaminations on LSU Outer Window] 1.1) Check that the LSU windows is contaminated by dirt 1.2) Check that there is the contamination on the optical path of the developing unit. [2. Partially No Developer on Developing Roller] 2.1) Check that there is the dirt between Deve roller and Dr. Blade in Developing unit. [3. Vertical Damage on ITB] 3.1) If the surface of ITB gets damaged, replace the ITB.
Vertical Moving White Band	1. Contaminations on Doctor Blade Gap	[1. Contaminations on Doctor Blade Gap] 1.1) Check that there are the dirt or contaminations between Deve roller and Dr. Blade in Developing unit.

Problem Description	Cause Description	Action to Resolve
Vertical White Band for Copy Job	1. Contaminations on CCDM or Scanning Window 2. Image Cell Error on CCDM	[1. Contaminations on CCDM or Scanning Window] [2. Image Cell Error on CCDM]
Vertical Band for a Particular Color	1. Contaminations on Charging Roller 2. OPC Cleaning Fail 3. OPC Scratch	[1. Contaminations on Charging Roller] 1.1) If the Charging roller is contaminated, replace the developing unit. [2. OPC Cleaning Fail] 2.1) Check that there is the vertical band on OPC after normal printing. If the vertical band occurs, replace the developing unit because of the defective OPC cleaning Blade. [3. OPC Scratch] 3.1) If the OPC is scratched, replace the developing unit.
Vertical Dark Band	1. Contaminations on Charging Roller 2. Slip on Charging Roller	[1. Contaminations on Charging Roller] 1.1) If the Charging roller is contaminated, replace the developing unit. [2. Slip on Charging Roller]
Vertical Random Streak	1. OPC Scratch	[1. OPC Scratch] 1.1) If the OPC is scratched, replace the developing unit.
Full Solid Black/ Color Image	1. Mis-Contact on Charging Bias 2. Wrong Charging Bias from HVPS	[1. Mis-Contact on Charging Bias] 1.1) Check and confirm the Charge Bias[TM #105-0010~0016]. If there is any wrong value, change the value. 1.2) Check the Charge Bias [EDC #105-0000~003]. If it is defective, replace the HVPS. 1.3) Check the connection between the charging bias Harness and the developing unit. 1.4) If the connection is OK, check the charging roller contact. 1.5) If the ITB contact is defective, replace the ITB. [2. Wrong Charging Bias from HVPS] 2.1) Check the external temparature sensor and humidity sensor. 2.2) If the sensor is normal, check the Charge Bias[TM #105-0010~0016]. If or not, change the value. 2.3) Check the Charge Bias [EDC #105-0000~003]. If it is defective, replace the HVPS. 2.4) If it is normal, check the contact between charge high voltage harness and developing unit.

Problem Description	Cause Description	Action to Resolve
Foggy Backgrounds for a Particular Color	1. Low Charging Bias	[1. Low Charging Bias] 1.1) Check the external temparature sensor and humidity sensor. 1.2) If the sensor is normal, check the Charge Bias[TM #105-0010~0016]. If or not, change the value. 1.3) Check the Charge Bias [EDC #105-0000~003]. If it is defective, replace the HVPS. 1.4) If it is normal, check the contact between charge high voltage harness and developing unit. 1.5) If it is normal, check the OPC grounding.
Foggy Background for All Colors	1. Mis-Sensing Outter Temperature 2. Wrong Charging Bias from HVPS	[1. Mis-Sensing Outter Temperature] 1.1) Check the external temparature sensor and humidity sensor. [2. Wrong Charging Bias from HVPS] 2.1) If the sensor is normal, check the Charge Bias[TM #105-0010~0016]. If or not, change the value. 2.2) Check the Charge Bias [EDC #105-0000~003]. If it is defective, replace the HVPS. 2.3) If it is normal, check the contact between charge high voltage harness and developing unit. 2.4) If it is normal, check the OPC grounding.
Periodic White/ Black/Color Spots	1. Damage/ Contamination on OPC 2. Damage/ Contamination Charging Roller	[1. Damage/Contamination on OPC] 1.1) In case of falling off the coating on OPC, the periodic black/ color spot will be occured. 1.2) If charging is defective by OPC damage, white spot will be occured. [2. Damage/Contamination Charging Roller] 2.1) If the charging roller has the damage or contamination, the periodic black/color spot will be occured.
White Spot on Solid Image	1. Unstable T2 Transfer Roller Nip 2. High T2 Transfer Voltage	[1. Unstable T2 Transfer Roller Nip] 1.1) Check the T2 Engage/Disenage motor running[#EDC #100-0010]. If it is defective, replace the T2 Engage/Disenage Motor. 1.2) Check the T2 Engage/Disenage sensor [#EDC #100-0011]. If it is defective, replace the sensor. 1.3) Check the T2 roller during T2 Engage/Disenage motor running [#EDC #100-0010]. If it is defective, replace the T2 Unit. 1.4) Check the ITB Drive Roller Ground. If it is defective, replace the ITB.

Problem Description	Cause Description	Action to Resolve
White Spot on Solid Image (continue..)	1. Unstable T2 Transfer Roller Nip 2. High T2 Transfer Voltage (continue..)	[2. High T2 Transfer Voltage] 2.1) Check the T2 transfer voltage [TM #107-0008~0009]. If there is any wrong value, change the value.[TM #107-0008~0009]. 2.2) Check the T2 Bias Read [EDC #107-0005]. If it is defective, replace the HVPS. 2.3) Check the ITB Drive Roller Ground. If it is defective, replace the ITB.
Dot Size Black/Color Spots	1. Developer Leakage 2. Unstable Charging Bias	[1. Developer Leakage] 1.1) The problem occurs because of the developer leakage. 1.2) Shake the developer horizontally and re-install it. 1.3) If the problem persists, print the 5~10 pages of the Full Solide image. And print the 5 pages of temporary image. Is the problem dieappeared? 1.4) Try these steps for 2,3 times. If the problem is not solved, replace the developing unit. [2. Unstable Charging Bias] 2.1) Check the external temparature sensor and humidity sensor. 2.2) If the sensor is normal, check the Charge Bias[TM #105-0010~0016]. If or not, change the value. 2.3) Check the Charge Bias [EDC #105-0000~003]. If it is defective, replace the HVPS. 2.4) If it is normal, check the contact between charge high voltage harness and developing unit. 2.5) If it is normal, check the OPC grounding.
Offset Image (after-image on OPC)	1. Poor Erasing 2. Poor Mechanical Cleaning	[1. Poor Erasing] 1.1) Check the Eraser Lamp working for each color. 1.2) If the Eraser lamp is normal, check that the Eraser Lens is contaminated or not. 1.3) If the Eraser Lens is normal, check the OPC surface. If the OPC rotates more than OPC life, the OPC coating thickness will be thin. [2. Poor Mechanical Cleaning] 2.1) When the OPC rotates, check the Cleaning Blade is working normally.

Problem Description	Cause Description	Action to Resolve
Auger Marks (thick slanted white band)	1. Low Toner Concentration 2. Developer Loss	[1. Low Toner Concentration] 1.1) In case of Low Toner Concetration. 1.2) Check the T/C control value [TM #111-0006~0017]. If there is any problem, change the value. 1.3) After operate Main , Black OPC/DEVE, Color OPC, Color Deve BLDC Motor [EDC #100-0000], [EDC #100-0002],[EDC #100-0004],[EDC #100-0006], operate the toner supply motor for 10 sec [EDC #111-0000~0003]. Check the printed image. 1.4) If the problem is improved by toner supply, change the T/C control value to raise the T/C [TM #111-0006~0017]. [2. Developer Loss] 2.1) The problem occurs because of the low toner. 2.2) Check the abnormal developing condition was occured by the defective environmantal sensor. 2.3) Check the Charge Bias TM #105-0010~0016] and Deve Bias [TM #106-0000~0003]. If there is any wrong value, change the value. 2.4) Check the Charge Bias [EDC #105-0000~003]. If it is defective, replace the HVPS. 2.5) Check the Deve Bias[EDC #106-0000~003]. If it is defective, replace the HVPS. 2.6) If Charge bias and HVPS are normal, replace the developing unit.
Carriers on Printed Image	1. High OPC Surface Potential	[1. High OPC Surface Potential] 1.1) The problems occurs because of abnormal charge/deve conditions. 1.2) Check the environmental sensor. 1.3) Check the Charge Bias TM #105-0010~0016] and Deve Bias [TM #106-0000~0003]. If there is any wrong value, change the value. 1.4) Check the Charge Bias [EDC #105-0000~003]. If it is defective, replace the HVPS. 1.5) Check the Deve Bias[EDC #106-0000~003]. If it is defective, replace the HVPS.

Problem Description	Cause Description	Action to Resolve
Toner Supply Error	1. Toner Supply Path is blocked by Developer	[1. Toner Supply Path is blocked by Developer] 1.1) Check the Toner Supply Motor [EDC #111-0000~0003]. 1.2) Check the toner supply shutter operates properly. 1.3) Check that the toner supply entrance is closed or not. 1.4) Check that the toner supply pipe is blocked or not. 1.5) Check the T/C sensor. After operate Main , Black OPC/DEVE, Color OPC, Color Deve BLDC Motor [EDC #100-0000], [EDC #100-0002],[EDC #100-0004],[EDC #100-0006], Check the T/C sensor value [EDC #111-0004~7]. 1.6) If the T/C sensor value [EDC #111-0004~7] is constant or abnormal, check the T/C Sensor or TC Sensor ADC of Engine board.
Early Toner Empty	1. High Image Density	[1. High Image Density] 1.1) Check the environmental sensor. 1.2) If the density of printed image is high, check the T/C control value [TM #111-0006~0017]. If it is abnormal, change the value. 1.3) Operate the CTD density control[EDC #117-0000] and check the density is decreased or not. 1.4) If the density is not decreased, operate the CTD density Patch [EDC #117-0001]. Check the density, decrease the density on Custom Color Setting 1.5) If you could not adjust the density on Custom Color, operate [TM #111-0006~0017] to adjust the T/C.
Toner Contamination on Printed Image	1. Toner Contamination of the Internal Mechanism	[1. Toner Contamination of the Internal Mechanism] 1.1) Clean the toner contamination.
Toner Contamination on the Lead Edge of the paper	1. Toner Contamination on Paper Path	[1. Toner Contamination on Paper Path] 1.1) Clean the toner contamination on paper path.
Toner Contamination on the Back of the Paper	1. Toner Contamination on Paper Path 2. Toner Contamination on T2 Roller	[1. Toner Contamination on Paper Path] 1.1) Clean the toner contamination on paper path. [2. Toner Contamination on T2 Roller] 2.1) Clean the T2 unit.
Dragged Image	1. Motor Error of the Developing Unit	[1. Motor Error of the Developing Unit] 1.1) In case that OPC isn't rotating. 1.2) Check and confirm Main drive motor, Black OPC/DEVE, Color OPC, Color Deve BLDC Motor [EDC #100-0000], [EDC #100-0002], [EDC #100-0004], [EDC #100-0006]. 1.3) Check the OPC coupling in developing unit was installed.

Problem Description	Cause Description	Action to Resolve
Broken Lines on Image	1. Lineburst on Fuser Unit	[1. Lineburst on Fuser Unit] 1.1) Check the Fuser unit is working out properly. 1.2) Check the T/C contol value [TM #111-0006~0017]. If there is any wrong value, change the value.. 1.3) Check the CTD density [EDC #117-0000]. 1.4) If the density is not decreased, operate the CTD density Patch[EDC #117-0001]. And check the density, decrease the density level on Custiom Color setting. 1.5) If you could not adjust the density on Custom Color, do [TM #111-0006~0017] to adjust the T/C.
Insufficient Toner Fixing on Printed Image	1. Low Fusing Temperature 2. High Toner Density	[1. Low Fusing Temperature] [2. High Toner Density] 2.1) Check the Fuser unit is working out properly. 2.2) Check the T/C contol value [TM #111-0006~0017]. If there is any wrong value, change the value.. 2.3) Check the CTD density [EDC #117-0000]. 2.4) If the density is not decreased, operate the CTD density Patch[EDC #117-0001]. And check the density, decrease the density level on Custiom Color setting. 2.5) If you could not adjust the density on Custom Color, operate [TM #111-0006~0017] to adjust the T/C.
No Image Output at Printing	1. Fail to Open LSU Cover 2. No High Voltage Output from HVPS	[1. Fail to Open LSU Cover] 1.1) Consult the LSU error flow chart. [2. No High Voltage Output from HVPS] 2.1) Check that abnormal developing condition was occured by the defective environmental sensor. 2.2) Check the Charge Bias [TM #105-0010~0016] and Deve Bias [TM #106-0000~0003]. If it is defective, change the value. 2.3) Check the Charge Bias [EDC #105-0000~003]. If it is defective, replace the HVPS 2.4) Check the Deve Bias [EDC #106-0000~003], replace the HVPS. 2.5) If High voltage output and HVPS are normal, replace the developing unit.
No Image Output at Copy	1. Fail to Obtain Scan Data	[1. Fail to Obtain Scan Data]
Inaccurate Color Registration	1. Failure in Auto Color Registration Process 2. Inaccuracies in Imaging Process	[1. Failure in Auto Color Registration Process] 1.1) Refer to Fuser open error [2. Inaccuracies in Imaging Process] 2.1) Execute the manual ACR

Problem Description	Cause Description	Action to Resolve
Failure in Auto Color Registration	1. Failure in Auto Color Registration Process 2. Inaccuracies in Imaging Process	[1. the contamination of ACR Sensor] 1.1) Check the contamination of ACR sensor 1.2) If the sensor is contaminated , make it clean. [2. the abnormality of ACR Pattern Image] 1.1) Check the ACR Pattern Image. 1.2) If the Image is abnormal , replace the Imaging Unit. [3. Fail to Obtain the ACR Sensing Data] 1.1) Check the ACR sensor connection and signal. 1.2) If the connection is wrong , correct it . 1.3) If the signal is abnormal , replace the sensor and/or harness.
LSU Motor Not Ready	1. LSU Polygon Motor Error	[1. LSU Polygon Motor Error] Replace the LSU unit
LSU Hsync Error	1. Error on LD/BD in LSU	[1. Error on LD/BD in LSU] Replace the LSU unit
Main BLDC Motor Error	1. High Torque Loaded on ITB and/or Paper Feeding Unit	[1. High Torque Loaded on ITB and/or Paper Feeding Unit] 1.1) Check the torque ITB and/or Paper Feeding Unit 1.2) If the torque is very high. replace ITB and/or Paper Feeding Unit [2. Motor Signal is abnormal] 1.1) Check the wire connection from motor to Engine PBA. 1.2) If the connection is wrong , correct it . 1.3) If the connection is right , replace motor and/or harness .
Black OPC & Developing BLDC Motor Error	1. High Torque Loaded on Black OPC and/or Developing Unit	[1. High Torque Loaded on Black OPC and/or Developing Unit] 1.1) Check the torque Black OPC and/or Developing Unit 1.2) If the torque is very high. replace Black OPC and/or Developing Unit [2. Motor Signal is abnormal] 1.1) Check the wire connection from motor to Engine PBA. 1.2) If the connection is wrong , correct it . 1.3) If the connection is right , replace motor and/or harness .
Color Developing BLDC Motor Error	1. High Torque Loaded on Developing Unit	[1. High Torque Loaded on Developing Unit] 1.1) Check the torque Developing Unit 1.2) If the torque is very high. replace Developing Unit [2. Motor Signal is abnormal] 1.1) Check the wire connection from motor to Engine PBA. 1.2) If the connection is wrong , correct it . 1.3) If the connection is right , replace motor and/or harness .

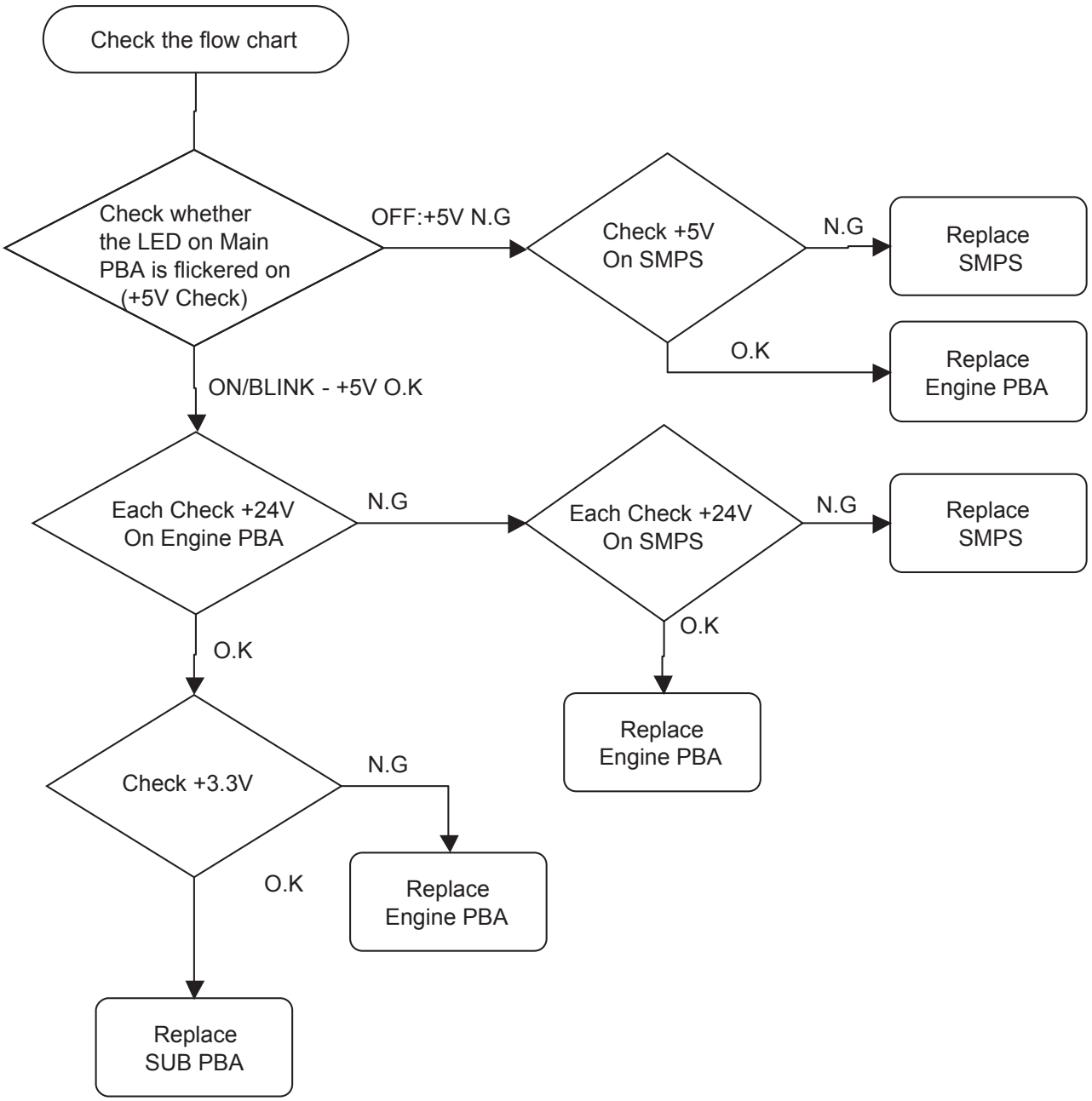
Problem Description	Cause Description	Action to Resolve
Color OPC BLDC Motor Error	1. High Torque Loaded on OPC Unit	[1. High Torque Loaded on OPC Unit] 1.1) Check the torque OPC Unit 1.2) If the torque is very high. replace OPC Unit [2. Motor Signal is abnormal] 1.1) Check the wire connection from motor to Engine PBA. 1.2) If the connection is wrong , correct it . 1.3) If the connection is right , replace motor and/or harness .
Fuser BLDC Motor Error	1. High Torque Loaded on Fuser Unit	[1. High Torque Loaded on Fuser Unit] 1.1) Check the torque Fuser Unit 1.2) If the torque is very high. replace Fuser Unit [2. Motor Signal is abnormal] 1.1) Check the wire connection from motor to Engine PBA. 1.2) If the connection is wrong , correct it . 1.3) If the connection is right , replace motor and/or harness .
Fuser Open Error	1. Thermistor Open 2. Thermostat Open 3. T2 Transfer Mis-Contact 4. Engine PBA Error	[1. Thermistor Open] 1.1) Check resistance of thermistors. 1.2) If the resistance value is infinite or much high (Mohm), replace the thermistor or Fuser Unit. [2. Thermostat Open] 2.1) Check resistance of thermostats. 2.2) If the resistance value is infinite or much high (Mohm), replace the thermostat or Fuser Unit. [3. T2 Transfer Mis-Contact] 3.1) Open the side cover and check high voltage contacts of T2 roller. 3.2) If there are any contaminations on the contact, make it clean. [4. Engine PBA Error] 4.1) If there is no problems in the above 3 checks, and the error is continuously displayed, replace Engine PBA.
No Booting	1. Power Out 2. Fail to Initialize Video PBA	[1. Power Out] 1.1) Check and confirm 5V output from SMPS. 1.2) Check power wire connections from SMPS to Engine PBA. 1.3) Check core voltages in Video/Engine PBA. [2. Fail to Initialize Video PBA] 2.1) Check the connections of DIMM Memory, HDD, and GUI interface harness. 2.2) Reboot the set. 2.3) If the set does not initialize, replace the Video PBA.

Problem Description	Cause Description	Action to Resolve
Continuous Logo Display at Initial State	1. Fail to Initialize Communication Port between Video PBA & GUI	[1. Fail to Initialize Communication Port between Video PBA & GUI] 1.1) Check the connection between Video PBA and GUI PBA. 1.2) Reboot the set. 1.3) Send any printing command. 1.4) If the printing job works, replace GUI PBA. 1.5) If the printing job does not work, replace Video PBA.
No Response from MCB	1. Disconnected Communication between Video PBA & GUI	[1. Disconnected Communication between Video PBA & GUI] 1.1) Check the connection between Video PBA and GUI PBA. 1.2) Reboot the set. 1.3) If the set displayed the same error message, replace Video PBA.

4.2.4 H/W problems and solutions

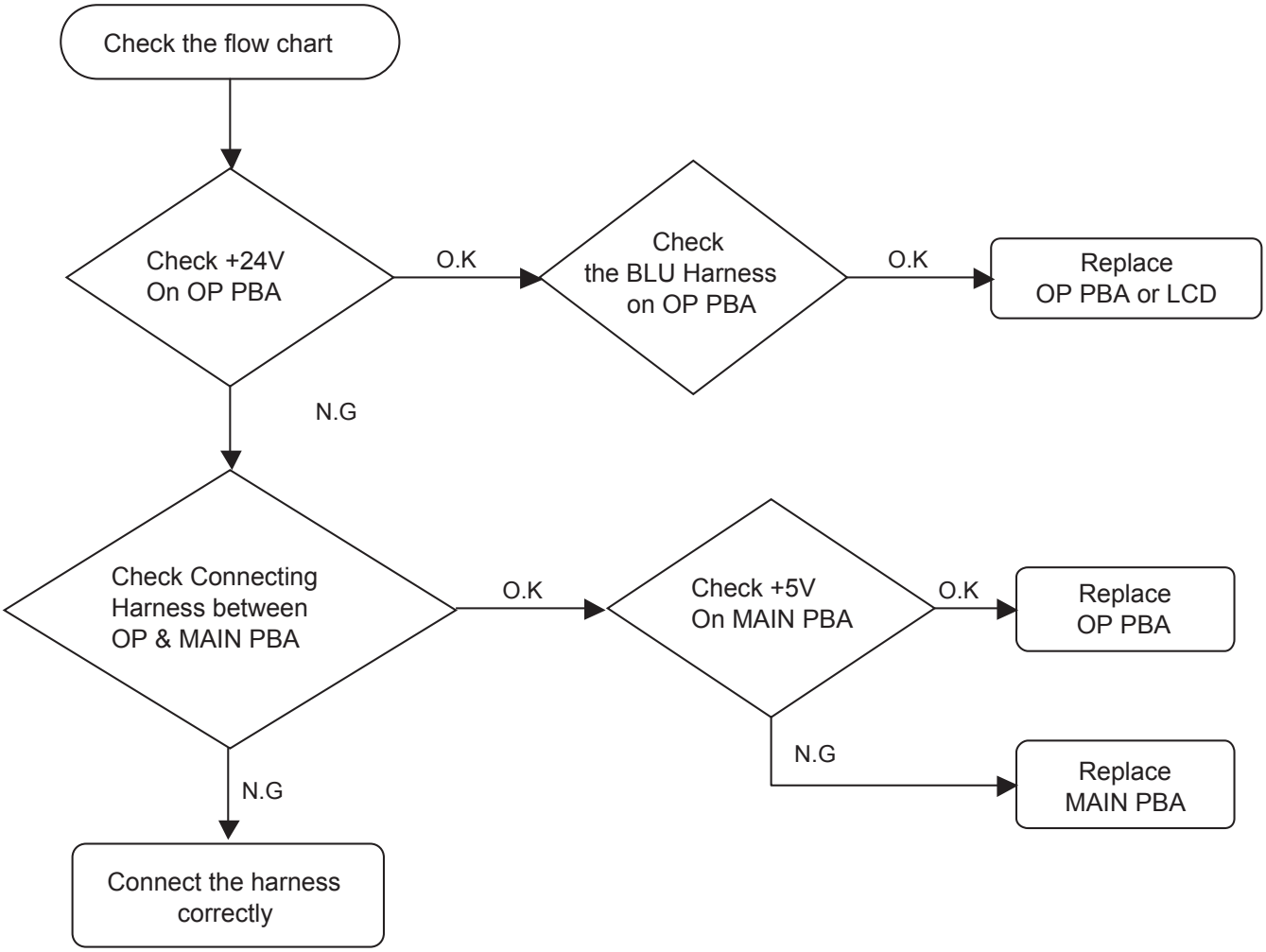
1) No Power

Description : Engine isn't warming up & LCD does not display anything on.



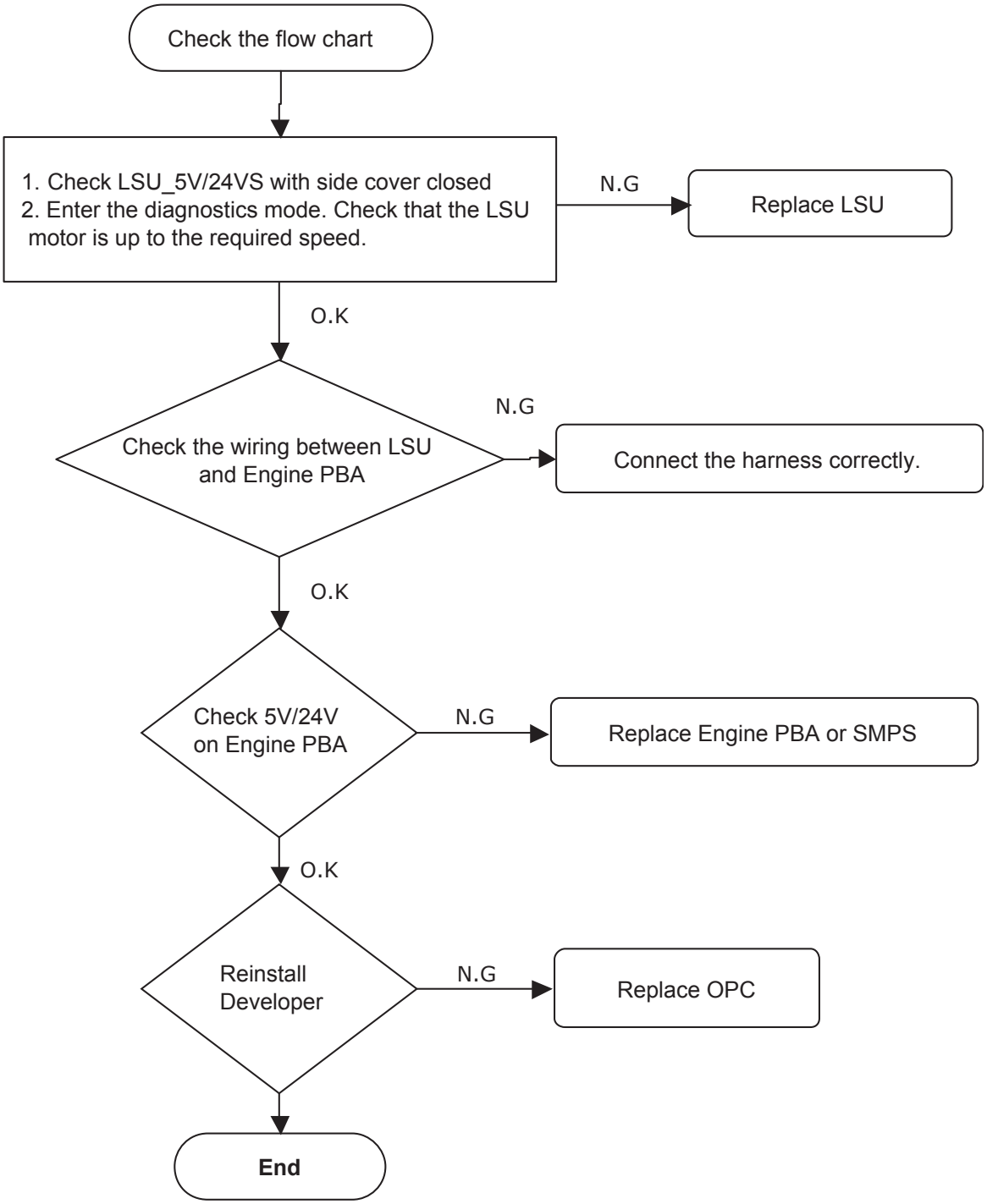
2) No Display on LCD

Description : Engine is warming up properly but LCD displays nothing.



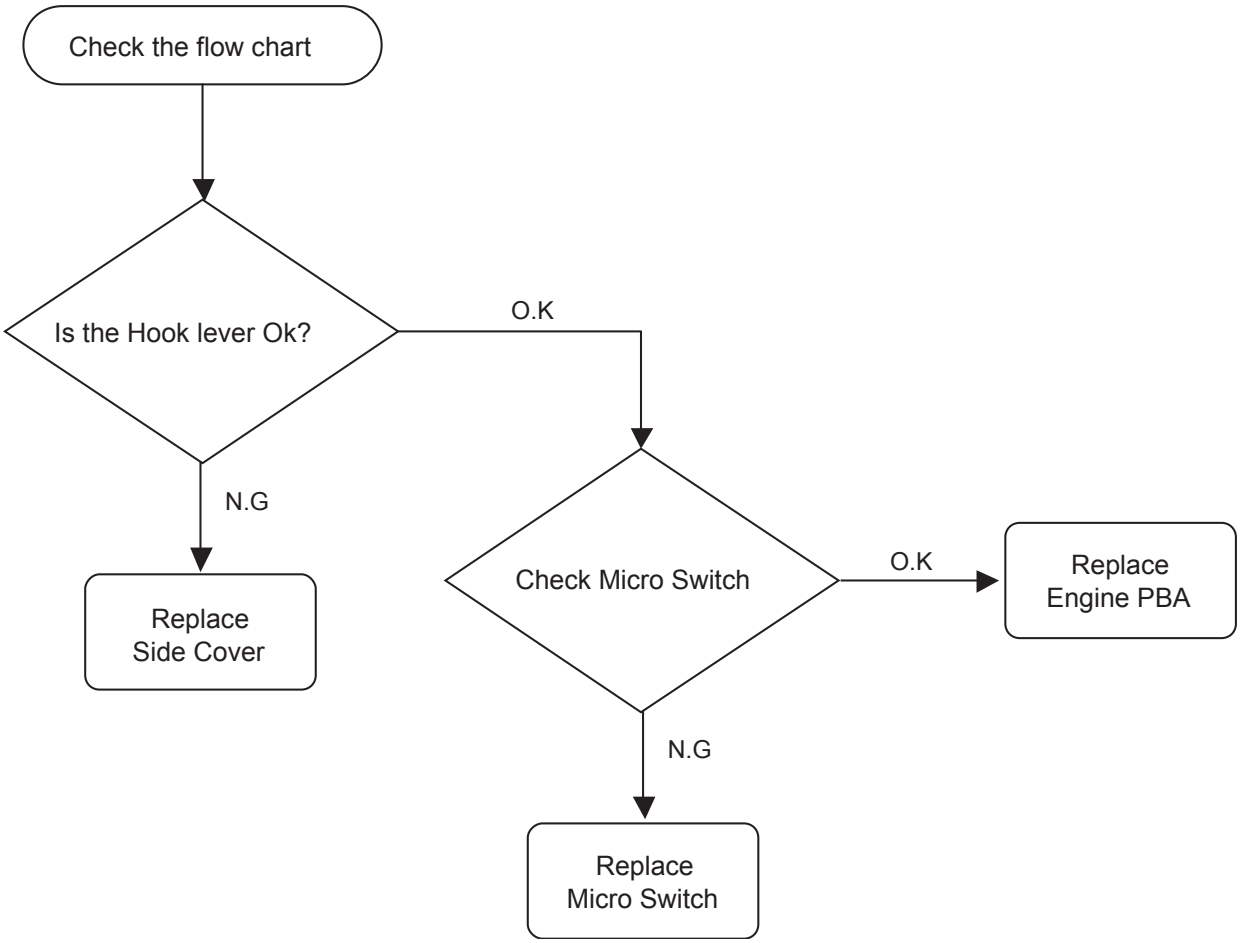
3) LSU error

Description : LSU error message is displayed



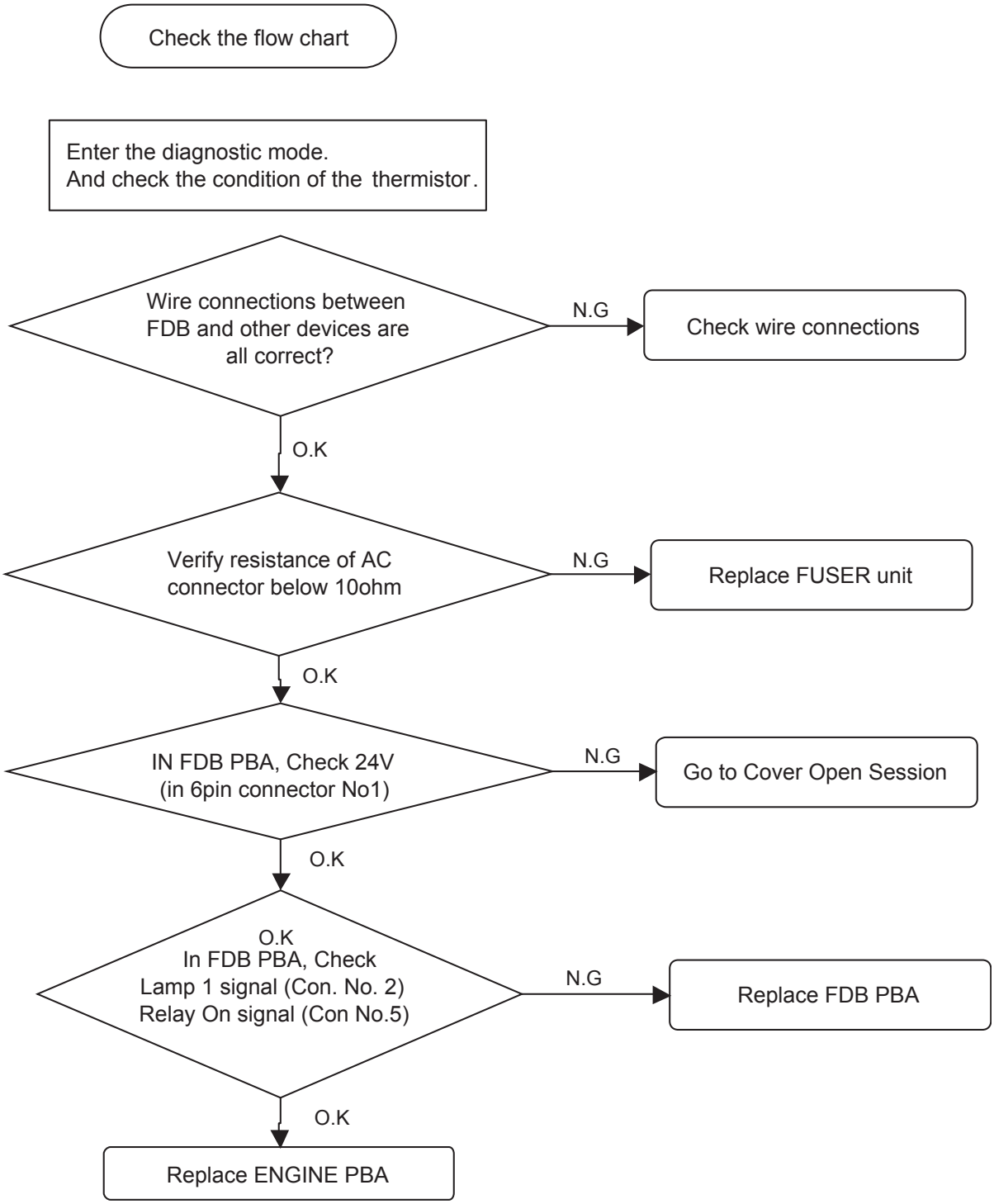
4) Cover open error

Description : The cover open message is displayed but the print cover is closed.



5) Fuser Low/High Error

Description : Fuser Low/High Error is Displayed.

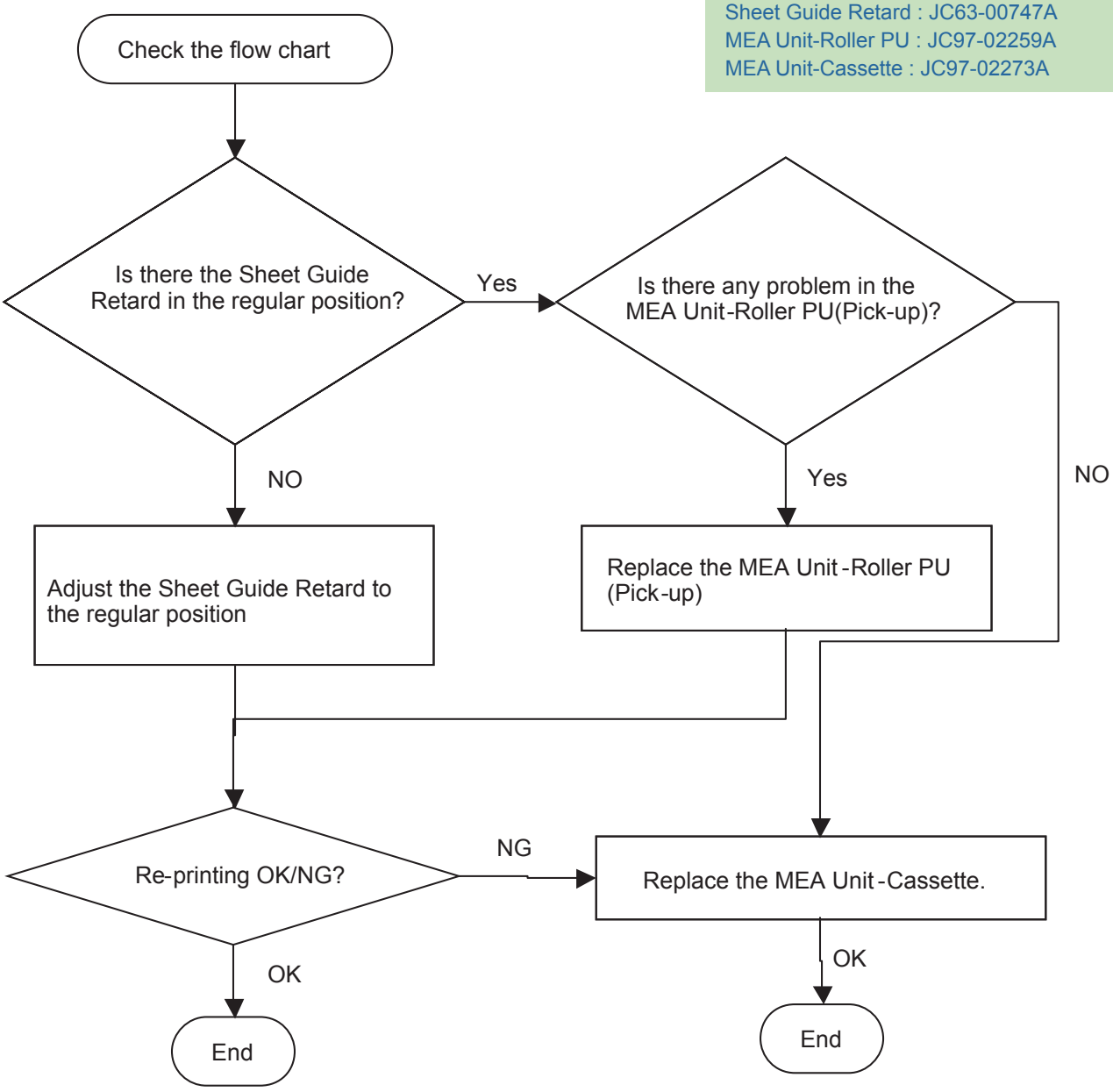


4.2.5 Mechanism problems and solutions

1) Double feeding

Description : Double feeding occurs.

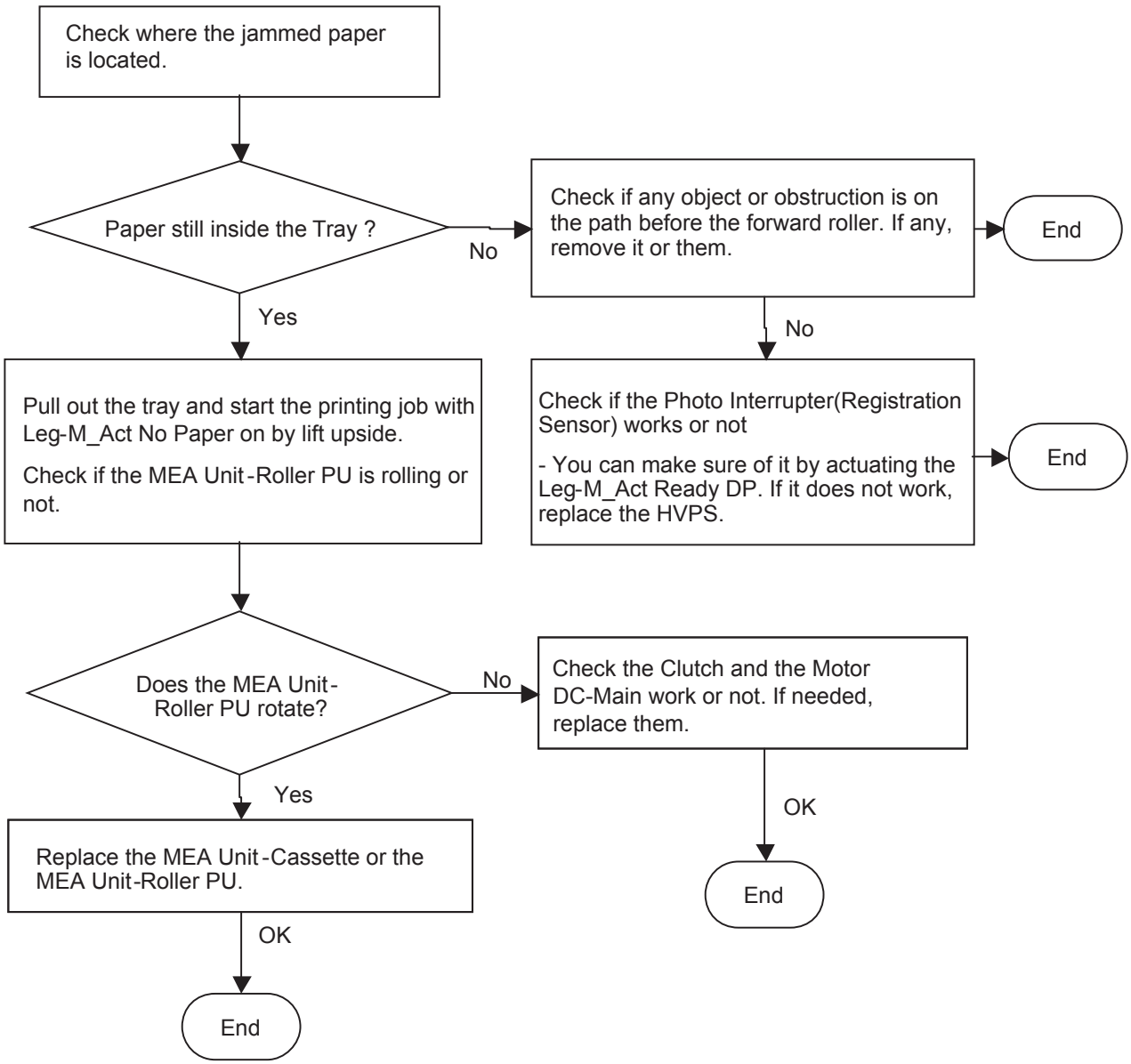
Sheet Guide Retard : JC63-00747A
MEA Unit-Roller PU : JC97-02259A
MEA Unit-Cassette : JC97-02273A



2) JAM 0

Description : Paper is jammed at Tray 1

Leg-M_Act No Paper : JC61-01350A	MEA Unit-Roller PU : JC97-02259A
Photo Interrupter : 0604-001095	Leg-M_Act Ready DP : JC61-01435A
Clutch:	Motor DC-Main :
HVPS :	MEA Unit-Cassette : JC97-02273A

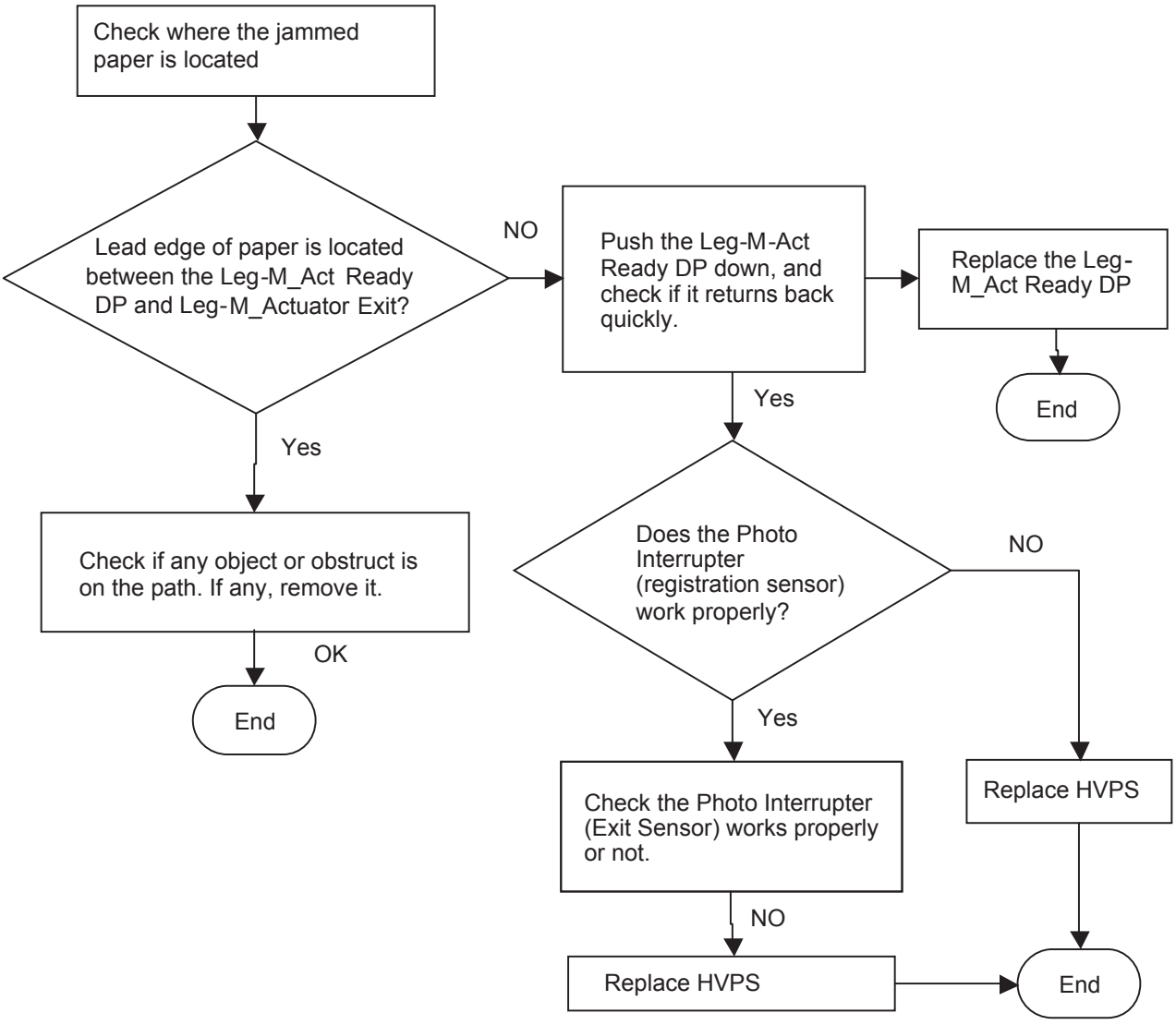

Check where the jammed paper is located.
Paper still inside the Tray ?
No
Check if any object or obstruction is on the path before the forward roller. If any, remove it or them.
End
Yes
No
Pull out the tray and start the printing job with Leg-M_Act No Paper on by lift upside.
Check if the MEA Unit-Roller PU is rolling or not.
Check if the Photo Interrupter(Registration Sensor) works or not
- You can make sure of it by actuating the Leg-M_Act Ready DP. If it does not work, replace the HVPS.
End
Does the MEA Unit-Roller PU rotate?
No
Check the Clutch and the Motor DC-Main work or not. If needed, replace them.
Yes
OK
End
Replace the MEA Unit-Cassette or the MEA Unit-Roller PU.
OK
End

3) JAM 1

Description : Paper is jammed at Fuser.
Registration Jam occurred.

Leg-M_Act Ready DP : JC61-01435A
Photo Interrupter : 0604-001095
HVPS:

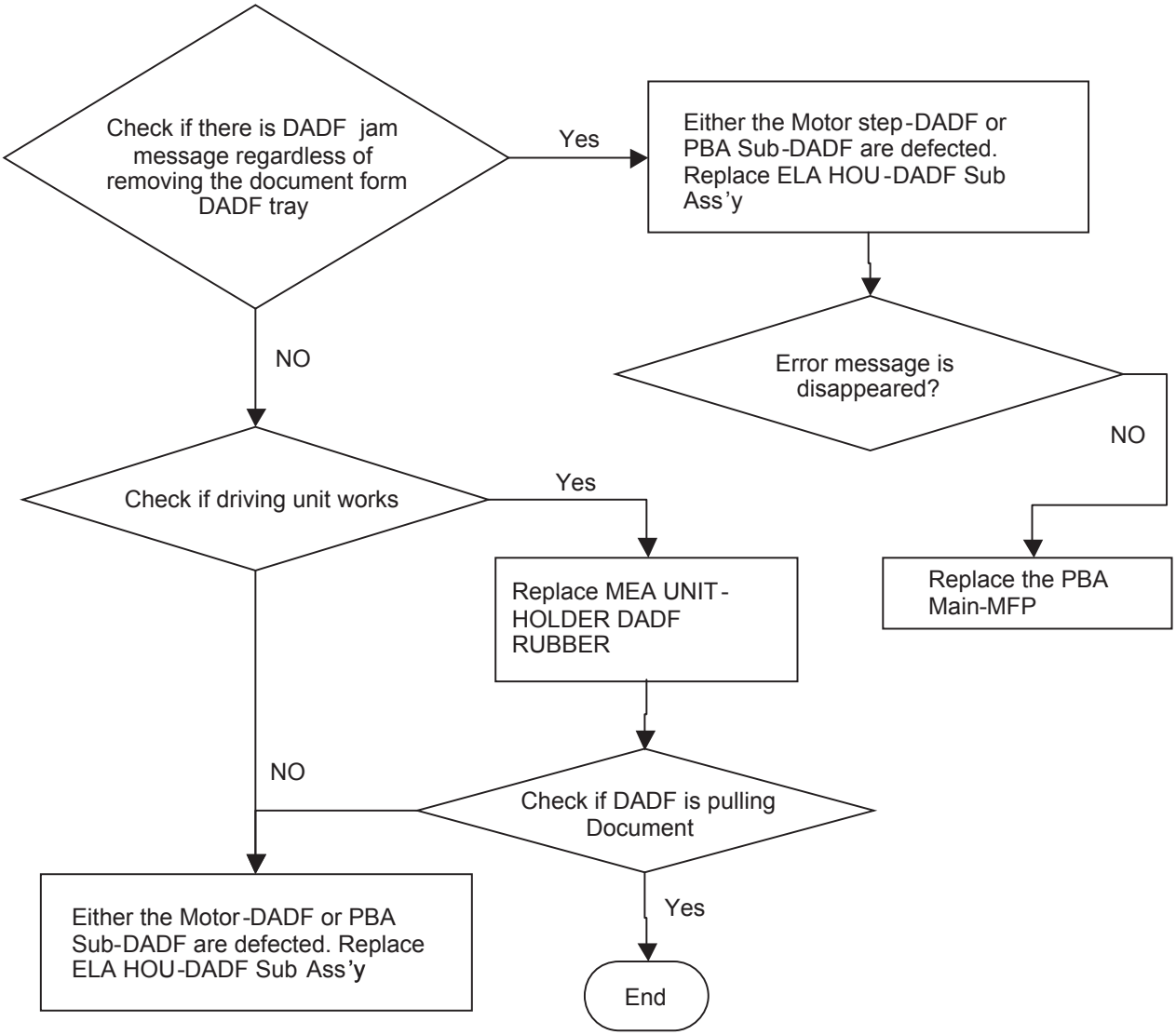
Leg-M_Actuator Exit : JC61-01384A
Photo Interrupter : 0604-001095


Check where the jammed paper is located
Lead edge of paper is located between the Leg-M_Act Ready DP and Leg-M_Actuator Exit?
NO
Push the Leg-M-Act Ready DP down, and check if it returns back quickly.
Replace the Leg-M_Act Ready DP
End
Yes
Yes
Check if any object or obstruct is on the path. If any, remove it.
OK
End
Does the Photo Interrupter (registration sensor) work properly?
NO
Yes
Check the Photo Interrupter (Exit Sensor) works properly or not.
Replace HVPS
NO
Replace HVPS
End

4) DADF Jam

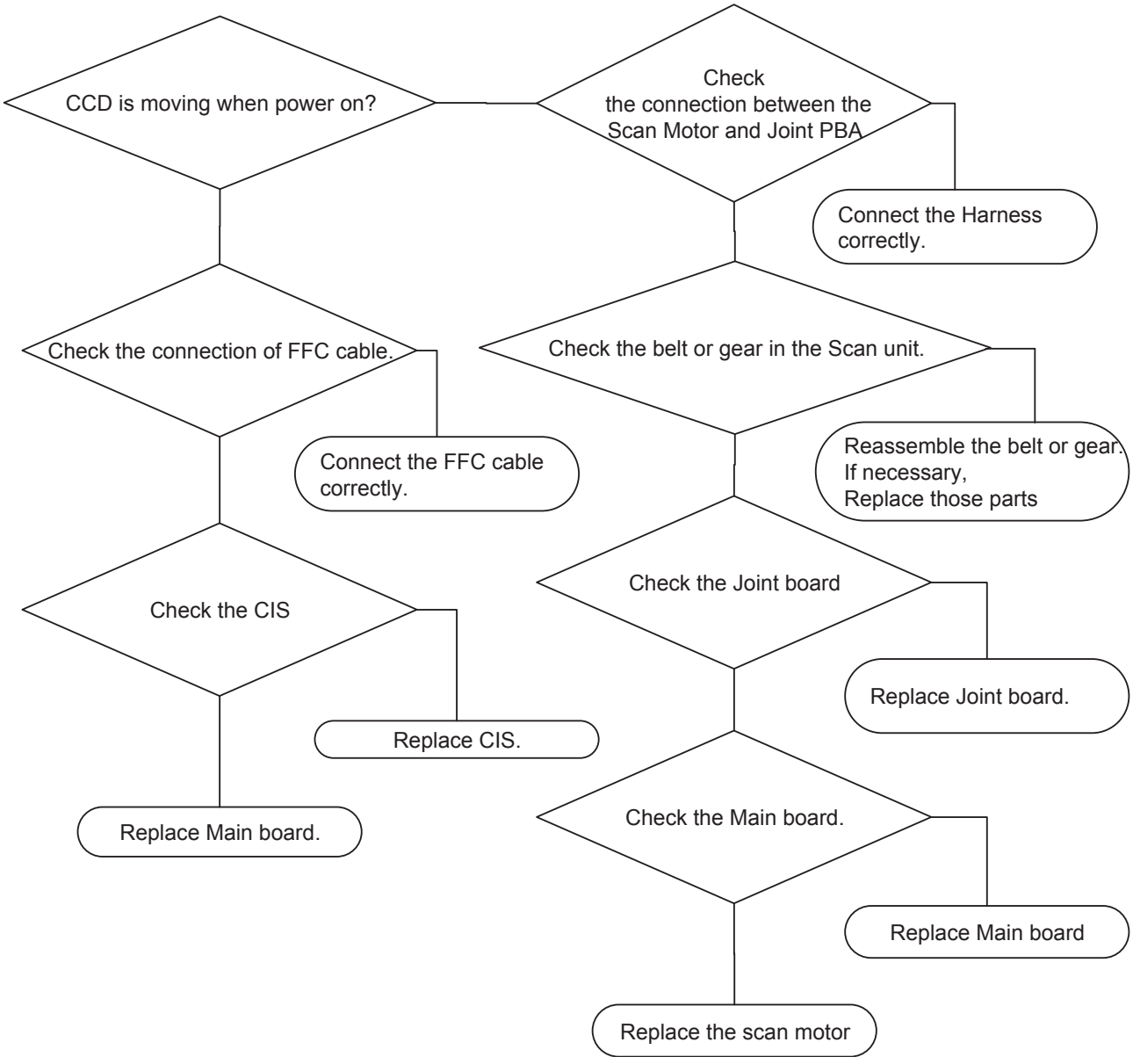
Description : The error message about the DADF Jam has displayed regardless of removing the Paper.

Leg-M_Act No Paper : JC61-01350A	MEA Unit-Roller PU : JC97-02259A
Photo Interrupter : 0604-001095	Leg-M_Act Ready DP : JC61-01435A
Clutch:	Motor DC-Main :
HVPS :	MEA Unit-Cassette : JC97-02273A


Check if there is DADF jam message regardless of removing the document form DADF tray
Yes
Either the Motor step-DADF or PBA Sub-DADF are defected. Replace ELA HOU-DADF Sub Ass'y
NO
Error message is disappeared?
NO
Check if driving unit works
Yes
Replace MEA UNIT-HOLDER DADF RUBBER
Replace the PBA Main-MFP
NO
Check if DADF is pulling Document
Yes
Either the Motor-DADF or PBA Sub-DADF are defected. Replace ELA HOU-DADF Sub Ass'y
End

5) Scan Lock

Description : CCD module has some problems.

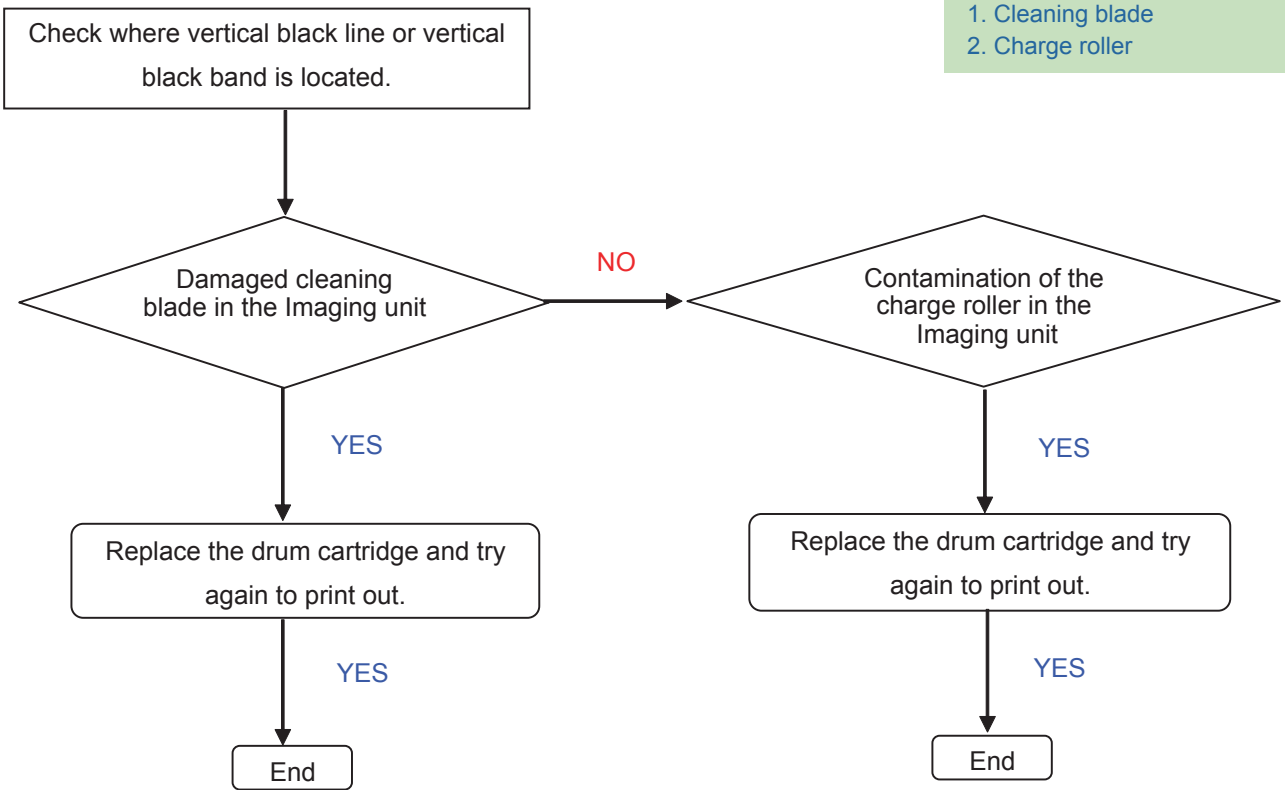


4.2.6 Image Quality problems and solutions

1) Vertical Black Line and Vertical Black Band

Description : 1. Straight thin black vertical line occurs in the printing.
2. Dark black vertical band occur in the printing.

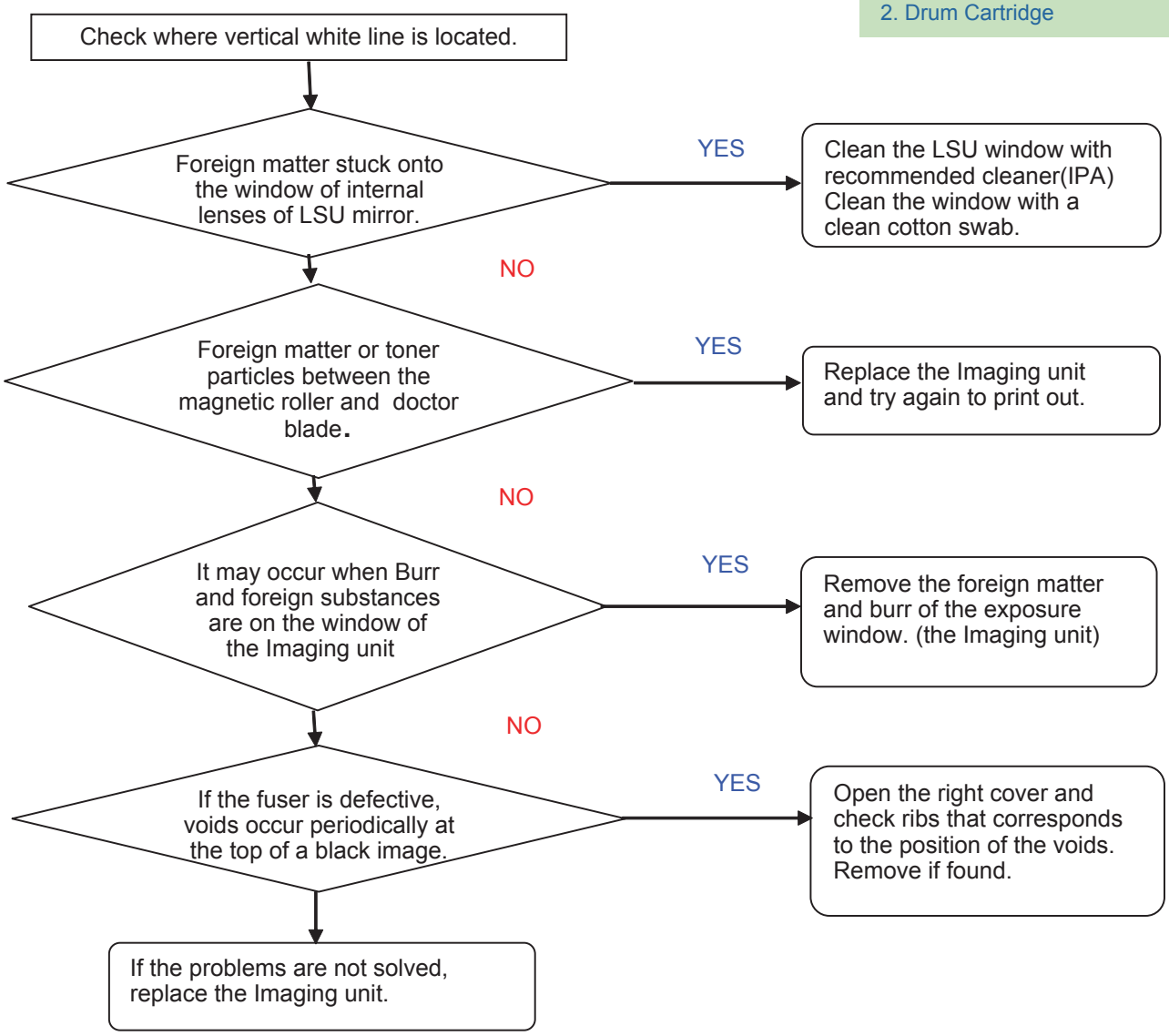
[Wrong Part]
1. Cleaning blade
2. Charge roller


Check where vertical black line or vertical black band is located.
Damaged cleaning blade in the Imaging unit
NO
Contamination of the charge roller in the Imaging unit
YES
YES
Replace the drum cartridge and try again to print out.
Replace the drum cartridge and try again to print out.
YES
YES
End
End

2) Vertical White Line

Description : White vertical voids in the image.

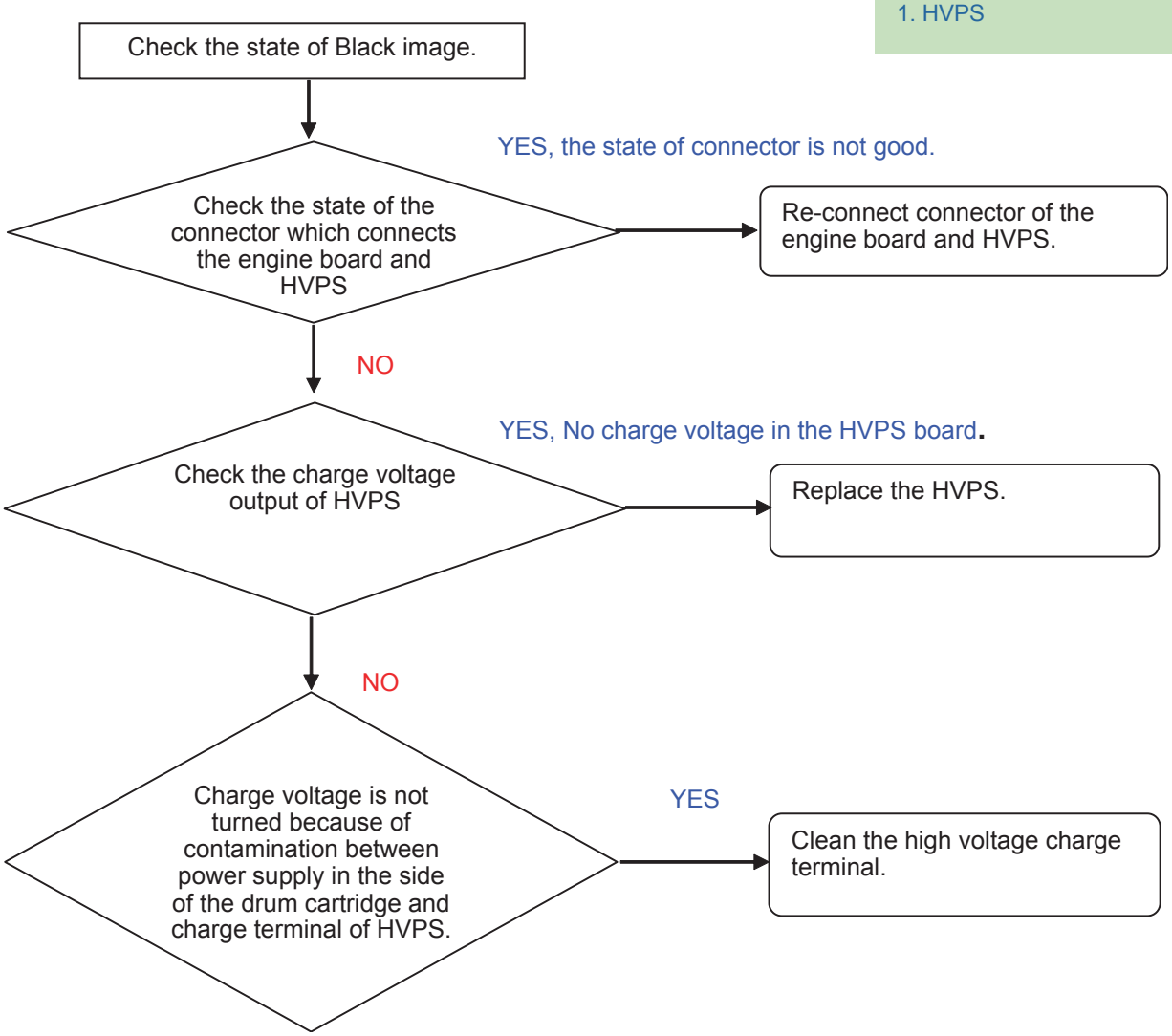
[Wrong Part]
1. LSU
2. Drum Cartridge


Check where vertical white line is located.
Foreign matter stuck onto the window of internal lenses of LSU mirror.
YES
Clean the LSU window with recommended cleaner(IPA) Clean the window with a clean cotton swab.
NO
Foreign matter or toner particles between the magnetic roller and doctor blade.
YES
Replace the Imaging unit and try again to print out.
NO
It may occur when Burr and foreign substances are on the window of the Imaging unit
YES
Remove the foreign matter and burr of the exposure window. (the Imaging unit)
NO
If the fuser is defective, voids occur periodically at the top of a black image.
YES
Open the right cover and check ribs that corresponds to the position of the voids. Remove if found.
If the problems are not solved, replace the Imaging unit.

3) Dark Image or Black Image

Description : The printed image is dark or black.

[Wrong Part]
1. HVPS

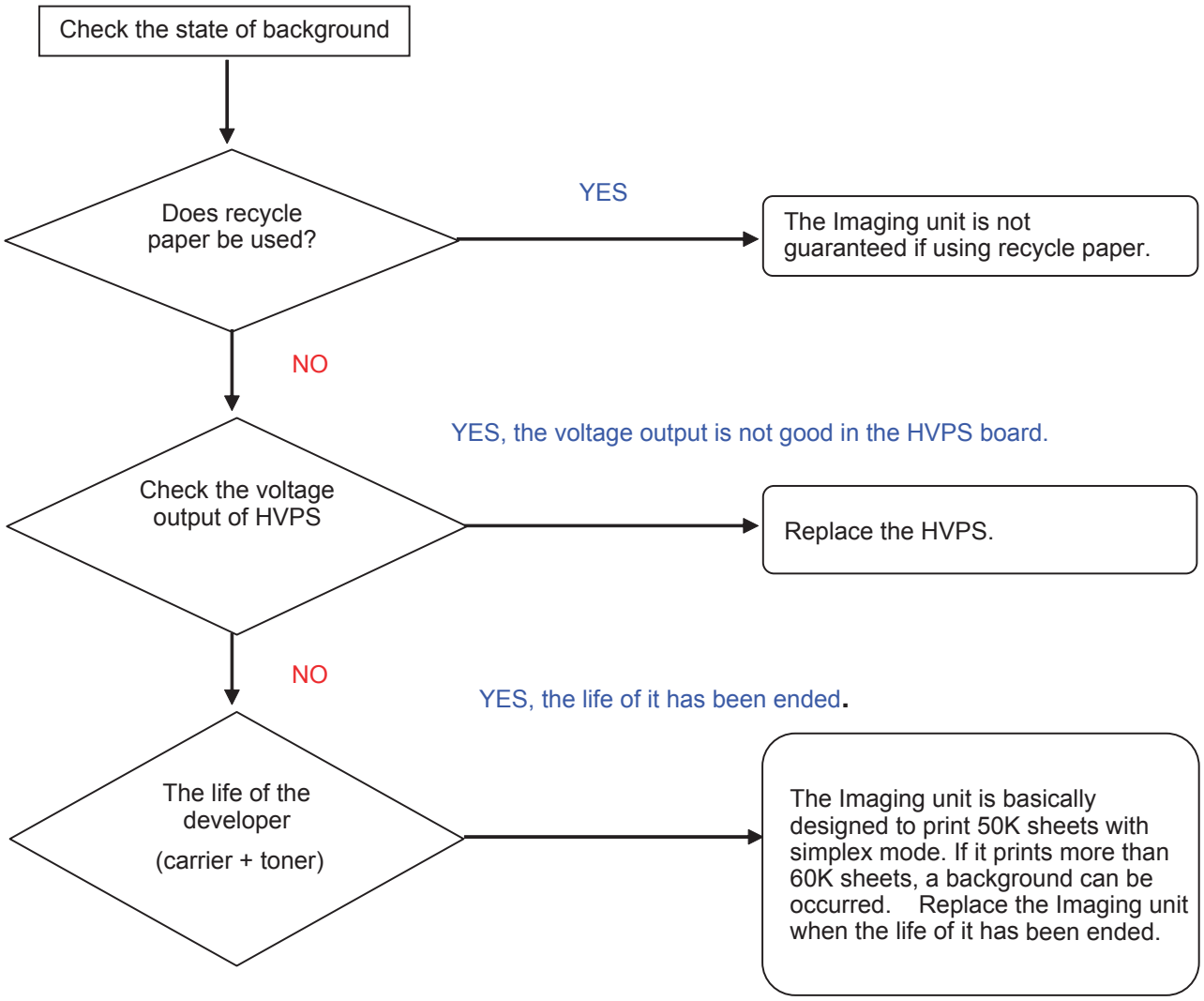

Check the state of Black image.
Check the state of the connector which connects the engine board and HVPS
YES, the state of connector is not good.
Re-connect connector of the engine board and HVPS.
NO
Check the charge voltage output of HVPS
YES, No charge voltage in the HVPS board.
Replace the HVPS.
NO
Charge voltage is not turned because of contamination between power supply in the side of the drum cartridge and charge terminal of HVPS.
YES
Clean the high voltage charge terminal.

4) Background

Description : Light Dark background appears in whole area of the printing

[Wrong Part]
1. HVPS
2. Low Q/M of developer (High T/C of developer)

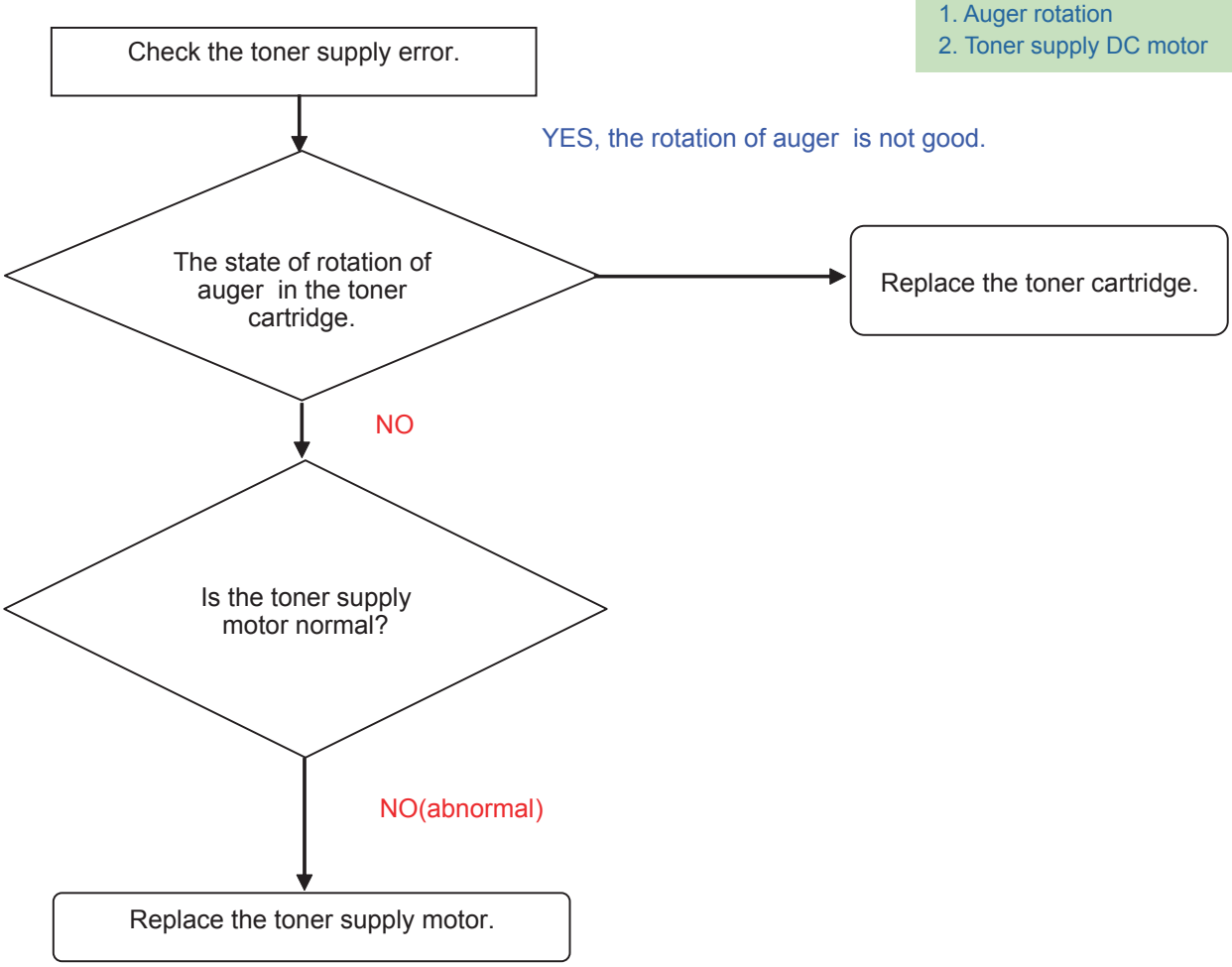
Background


Check the state of background
Does recycle paper be used?
YES
The Imaging unit is not guaranteed if using recycle paper.
NO
YES, the voltage output is not good in the HVPS board.
Check the voltage output of HVPS
Replace the HVPS.
NO
YES, the life of it has been ended.
The life of the developer
(carrier + toner)
The Imaging unit is basically designed to print 50K sheets with simplex mode. If it prints more than 60K sheets, a background can be occurred. Replace the Imaging unit when the life of it has been ended.

5) Toner Supply Error

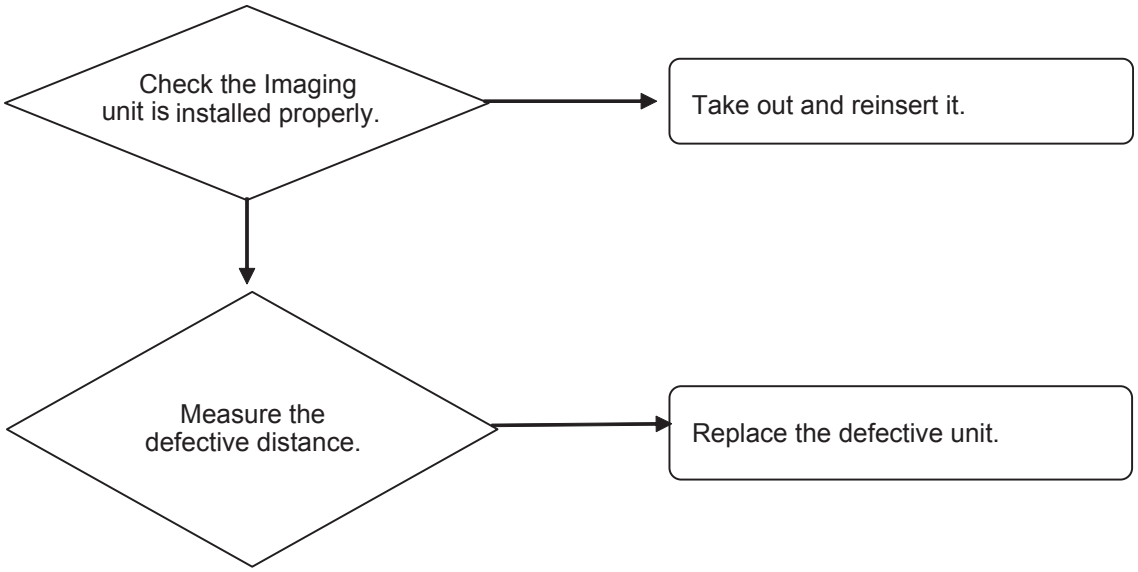
Description : The poor supply of toner in the printing job.

[Wrong Part]
1. Auger rotation
2. Toner supply DC motor


Check the toner supply error.
YES, the rotation of auger is not good.
The state of rotation of auger in the toner cartridge.
Replace the toner cartridge.
NO
Is the toner supply motor normal?
NO(abnormal)
Replace the toner supply motor.

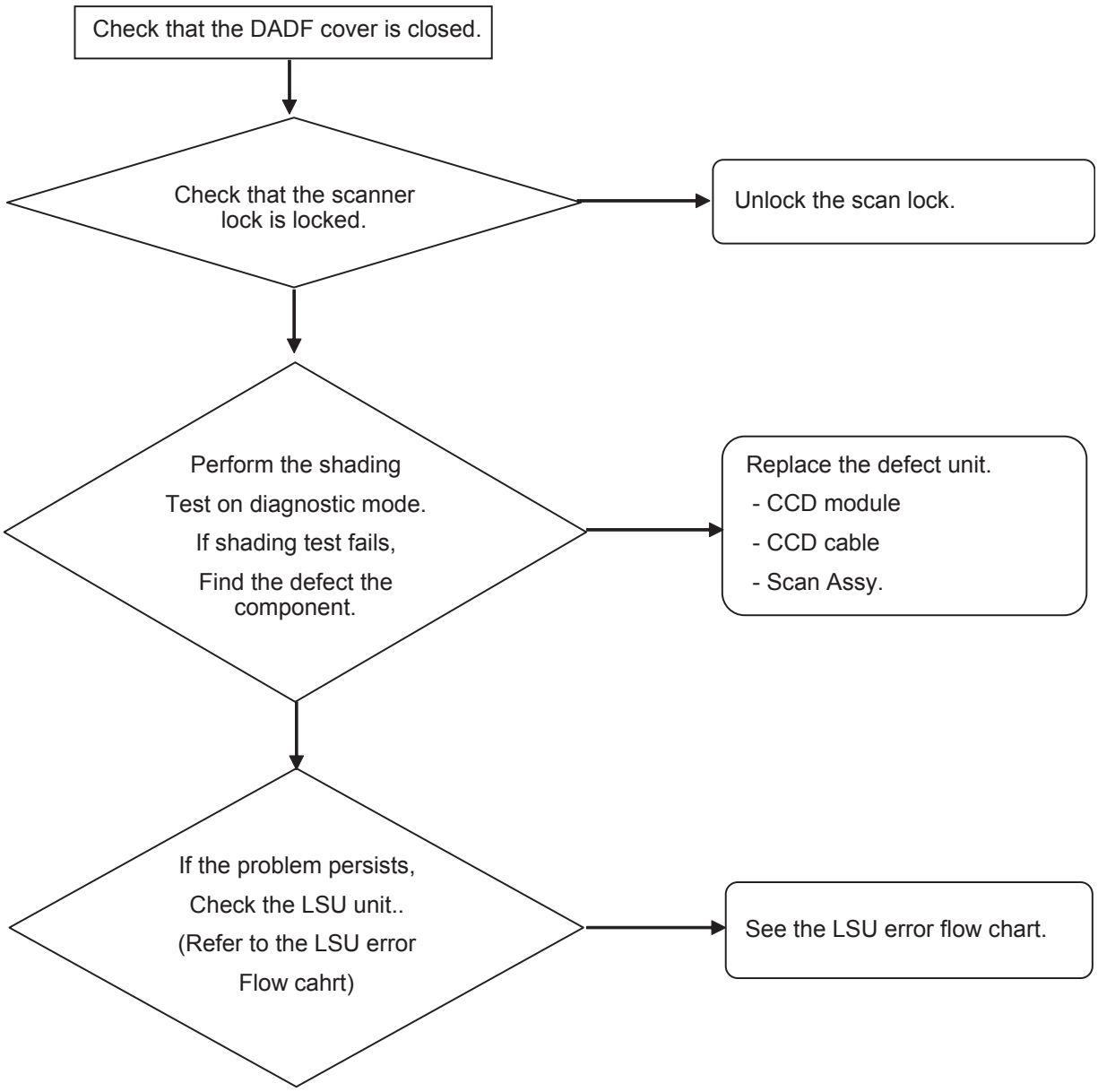
6) Horizontal stripes

Description : Horizontally aligned black streaks or smears appear.


Check the Imaging unit is installed properly.
Take out and reinsert it.
Measure the defective distance.
Replace the defective unit.

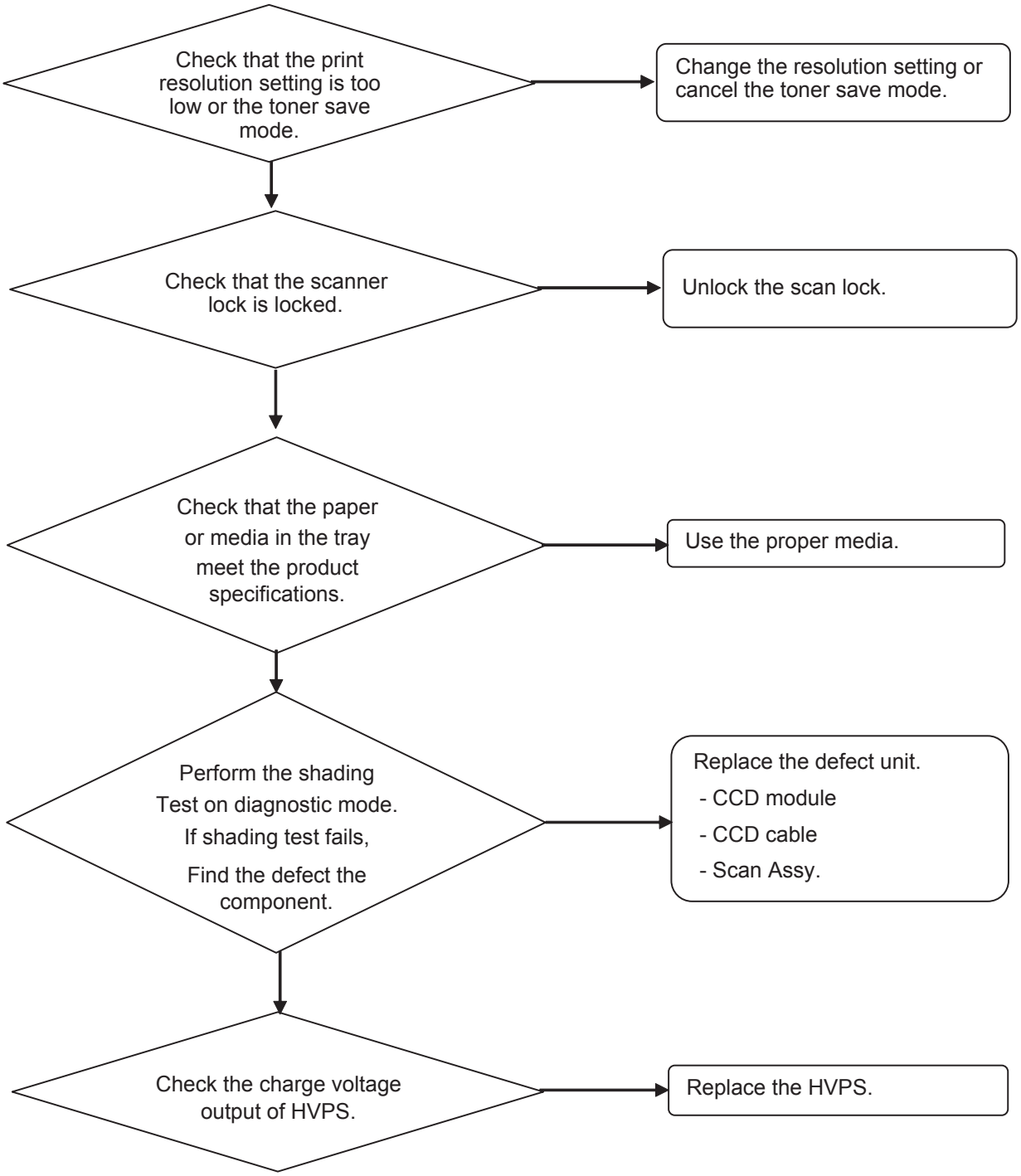
7) Blank Page

Description : The blank page is printed out when copying


Check that the DADF cover is closed.
Check that the scanner lock is locked.
Unlock the scan lock.
Perform the shading Test on diagnostic mode. If shading test fails, Find the defect the component.
Replace the defect unit.
- CCD module
- CCD cable
- Scan Assy.
If the problem persists, Check the LSU unit.. (Refer to the LSU error Flow cahrt)
See the LSU error flow chart.

8) Light image

Description : The light page is printed out when copying


Check that the print resolution setting is too low or the toner save mode.
Change the resolution setting or cancel the toner save mode.
Check that the scanner lock is locked.
Unlock the scan lock.
Check that the paper or media in the tray meet the product specifications.
Use the proper media.
Perform the shading Test on diagnostic mode. If shading test fails, Find the defect the component.
Replace the defect unit.
- CCD module
- CCD cable
- Scan Assy.
Check the charge voltage output of HVPS.
Replace the HVPS.